

Final

**Environmental Condition of Property
to Support Hawaii Public-Private
Venture Housing Phase 4
Marine Corps Base Hawaii Housing Areas:
Mololani, Pa Honua 3, & Ulupau
KANEEOHE BAY, HAWAII**

August 2007

**Department of the Navy
Commander
Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134**



Contract Number N62742-06-D-1891, CTO 0002

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August 2007

Prepared for:



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Commander
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Contract Number N62742-06-D-1891, CTO 0002

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DEPARTMENT OF THE NAVY
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Ser EV4/824
5 September 2007

From: Commander, Naval Facilities Engineering Command, Pacific
To: Commanding General, Marine Corps Base Hawaii Kaneohe
(Attn: (b) (6))

Subj: ENVIRONMENTAL CONDITION OF PROPERTY (ECP) TO SUPPORT
HAWAII PUBLIC-PRIVATE VENTURE HOUSING PHASE 4, MARINE
CORPS BASE HAWAII HOUSING AREAS: MOLOLANI, PA HONUA 3 AND
ULUPAU, KANEOHE BAY

Ref: (a) DoN Environmental Policy Memorandum 06-06: Streamlined
Environmental Procedures Applicable to Non-BRAC Real Estate
Actions of 05 Jul 06

Encl: (1) Environmental Condition of Property to Support Hawaii Public-Private
Venture Housing Phase 4, Marine Corps Base Hawaii Housing Areas:
Mololani, Pa Honua 3, and Ulupau, Kaneohe Bay, Hawaii of Aug 07

1. Enclosure (1), which has been prepared in accordance with reference (a) to assess and document the environmental conditions for the proposed real estate action, has been reviewed and approved. The ECP was conducted to facilitate the lease of the land on which the housing units are located and the ownership transfer of the housing units and ancillary facilities in Mololani, Pa Honua 3 and Ulupau Neighborhood. Recommend inclusion of the environmental land use controls (notifications, covenants, and restrictions) contained in section 7 of enclosure (1) in the real property documents to notify the lessee, ensure compliance with applicable regulations, and ensure health and safety of on-site workers.

2. If you have any questions, please contact (b) (6) of our Environmental Restoration Product Line at (808) 472-1424.

(b) (6)

By direction

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ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing materials
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
AUP	ASTs, USTs, and Petroleum-related structures
BRAC	Base Realignment and Closure
CCH	City and County of Honolulu
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CERFA	Community Environmental Response Facilitation Act
CMU	concrete masonry unit
CONSENT	Consent Decrees
CORRACTS	Corrective Action Report
DoD	Department of Defense
DoN	Department of the Navy
EBS	environmental baseline survey
ECP	environmental condition of property
EDR	Environmental Data Resources, Inc.
EIFS	Exterior Insulation and Finish System
ENG CONTROLS	Engineering Controls
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
FEMA	Federal Emergency Management Agency
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FINDS	Facility Index System/Facility Identification Initiative
FTTS	FIFRA/TSCA Tracking System
FUDS	Formerly Used Defense Sites
HA	Hazard Assessment
HMIRS	Hazardous Materials Information Reporting System
HS/HM/HW	hazardous substance/hazardous material/hazardous waste
HUD	Housing and Urban Development
ICRMP	Integrated Cultural Resources Management Plan
INRMP/EA	Integrated Natural Resources Management Plan/Environmental Assessment

INST CONTROL	Institutional Controls
IR	Installation Restoration
LBP	lead-based paint
LUST	Leaking Underground Storage Tank
LQG	Large Quantity Generator
MCBH	Marine Corps Base Hawaii
MCDC	Mokapu Central Drainage Channel
MECPD	MCBH Environmental Compliance and Protection Department
mg/kg	milligrams per kilograms
MINES	Mines Master Index File
MLTS	Material Licensing Tracking System
MW/BW	medical waste/biohazardous waste
NAVFAC PACIFIC	Naval Facilities Engineering Command, Pacific
NFRAP	No Further Remedial Action Planned
NPDES	National Pollutant Discharge Elimination System
NPL	Federal National Priorities List
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
ODI	Open Dump Inventory
ODS	ozone-depleting substance
ORNL	Oak Ridge National Laboratory
PADS	PCB Activity Database System
PCBs	polychlorinated biphenyls
pCi/L	picocuries per liter
POC	Point of contact
PPV	Public-Private Venture
RAATS	RCRA Administrative Action Tracking System
RCRA	Resource Conservation and Recovery Act of 1976
RCRIS	Resource Conservation and Recovery Information System
RMTC	R.M. Towill Corporation
ROD	Record of Decision
RPM	Remedial Project Manager
SHWS	State Hazardous Waste Sites
SI	Site Inspection
SPILLS	Release Notifications
SQG	Small Quantity Generator

SSTS	Section 7 Tracking Systems
TMK	tax map key
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
TSD	Treatment Storage and Disposal
UMTRA	Uranium Mill Tailings Sites
UIC	Underground Injection Control
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USMC	United States Marine Corps
UST	Underground Storage Tank
UXO	unexploded ordnance
WW/SW	wastewater/stormwater

EXECUTIVE SUMMARY

The United States (U.S.) Department of the Navy (DoN), Naval Facilities Engineering Command, Pacific (NAVFAC PACIFIC) requested the performance of this Environmental Condition of Property (ECP). The ECP study area consists of three U.S. Marine Corps (USMC) neighborhoods located within the Marine Corps Base Hawaii (MCBH) Kaneohe Bay. The purpose of an ECP is to gather sufficient data to: (1) document existing environmental conditions of the survey area, (2) identify areas of potential environmental concern, and (3) classify the survey area based on its environmental condition. In this case, the ECP was conducted to facilitate the lease of the land on that the housing units are located (Class I Property) and to facilitate the ownership transfer of the housing units and ancillary facilities (Class II Property).

The ECP study area, hereinafter known as the Subject Property, consists of the following Class I (land) and Class II Property (improvements) located at MCBH Kaneohe Bay (Figure ES-1):

1. Mololani Neighborhood
2. Pa Honua 3 Neighborhood
3. Ulupau Neighborhood (central and south portion of)

The ECP examined the following potential environmental conditions: aboveground and underground storage tanks (ASTs/USTs) and petroleum-related structures (AUP); asbestos-containing materials (ACM); hazardous substances/hazardous materials/hazardous waste (HS/HM/HW); landfills; lead-based paint (LBP); lead-contaminated soil, medical/biohazardous waste (MW/BW); mixed waste; ordnance/unexploded ordnance (UXO); operationally contaminated/ Installation Restoration (IR) Program sites; pesticides/herbicides; polychlorinated biphenyls (PCBs); potable water; radioactive material; radon; wastewater and stormwater (WW/SW); natural resources; cultural resources and other environmental concerns.

The ECP did not identify any current environmental conditions on the Subject Property that would affect human health, the environment, and/or the future use of the Subject Property by a private entity for family housing with the exception of the following areas of environmental concern:

Class I Property (the land)

The Class I Property (the land) is classified as generally belonging to Category 1¹ (areas where no release or disposal of hazardous substances or petroleum products has occurred including no migration of these substances from adjacent areas).

There are two IR sites located adjacent to the Subject Property with hazardous waste concerns where removal/remedial actions are underway or have been initiated but are not yet complete (Category 5). Additionally, there are several findings of concern that require notifications for the Class I Property (land) that are summarized below.

¹ Category 1 refers to the Environmental Condition of Property (ECP) designation and is explained in detail in Section 1.4 of this document.

Asbestos-Containing Material (ACM). ACM may also be present in underground transite piping. This finding is an area of concern pertaining to the Class I Property (land).

Lead in Soil. Based on historical research, the former housing units in Pa Honua 3 housing area may have contained LBP; therefore, the lead in soil is a potential concern. Lead Risk Assessments were recently performed for the Mololani and Ulupau neighborhoods and a “community-wide” lead in soil hazard was not found. However, isolated instances of lead in soil may occur because of the presence of lead-based paint on the housing units.

Pesticides/Herbicides. Pesticides/Herbicides may be present in the soil in all neighborhoods as a result of past legal pesticide applications and do not require remediation (Category 1); however, future construction that may disturb such soils may require environmental, as well as safety and health, controls. Pesticides/Herbicides have been identified in areas within the Pa Honua 3 neighborhood. This is a finding of concern for the Class I Property (land) in all neighborhoods.

Other Environmental Concerns - Cultural and Natural Resources. All neighborhoods have concerns regarding landscaping or plant species alterations. Any changes must be approved by the Government and adhere to the MCBH Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA) (2001) as updated in the MCBH INRMP (2006), Appendix D and component Master Landscaping Guidelines (USMC 2006). Erosion control measures need to be addressed prior to any ground disturbance and the proposed action must be reviewed by the MCBH Environmental Department.

The northwestern portion of the Mololani neighborhood is assessed to be within the high archaeological sensitivity zone, known as the Mokapu Burial Area, in the MCBH Integrated Cultural Resources Management Plan (ICRMP). The Mokapu Burial Area is listed in the National Register of Historic Places (NRHP).

The area adjacent to the southern edge of Ulupau neighborhood is assessed to be within the high archaeological sensitivity zone in the MCBH Integrated Cultural Resources Management Plan (ICRMP) (DoN 2006a).

The two wetlands (Motor Pool Wetlands and the Nu’upia Ponds Wetlands Area) are downstream of drainage from the Pa Honua neighborhood and are also frequented by endangered and protected species. Coordination with personnel from MCBH Environmental Compliance and Protection Department (MECPD) will be necessary when working at the neighborhood.

Class II Property (improvements)

The Class II Property (improvements) is classified, based on its environmental condition, as generally belonging to Category 1.

Additionally, there are several findings of concern that require notifications for the Class II Property (improvements) that are summarized below.

Asbestos-Containing Material (ACM). Previous asbestos surveys² conducted within the Subject Property have identified ACM in the following neighborhoods: Mololani and Ulupau. In general,

² All asbestos surveys referenced were “routing surveys” of common accessible suspect materials and were not intended to be demolition surveys.

ACM may consist of the following: floor tiles and mastic; linoleum flooring and mastic; vinyl sheet flooring; base cove; sink undercoating; pipe insulation; duct insulation; pitch and gravel roofing; roofing shingles and roofing felt.

In addition, demolition of similar military housing on Oahu has identified other ACM that may not be readily accessible or visible during a routine ACM survey (i.e. non-demolition survey). ACM that may also be present in the housing units include: roofing materials, asbestos concrete pipes, transite in housing walls, and asbestos coated pipes in concrete foundations. This is a finding of concern for the Mololani and Ulupau housing areas.

Hazardous Substance/Hazardous Material/Hazardous Wastes. The housing units within the Mololani neighborhood contain canec ceiling panels that are known to contain arsenic. Lead and mercury-containing fluorescent lamps and switches and ozone-depleting substance-containing appliances may also be present within the Mololani and Ulupau neighborhoods. These building materials are not regulated under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and do not require an assigned ECP category. However, these building materials require special handling and disposal procedures during demolition or renovation activities, and have been listed for disclosure purposes.

Lead-Based Paint (LBP). The LBP survey of Mololani and the Ulupau neighborhoods were completed in 2007 in conjunction with this ECP. The results of the survey indicate LBP is present in the Mololani and Ulupau neighborhoods. An LBP Survey was not conducted for the Pa Honua 3 neighborhood since it is newly constructed. LBP hazards are not regulated under CERCLA, and do not have an ECP category assigned to LBP hazards; therefore, they are addressed in this ECP for disclosure purposes.

Pesticides/Herbicides. According to housing management, pesticides/herbicides have been legally applied to the interior of the homes at MCBH housing areas. Chlordane or other discontinued pesticides may have been applied indoors. This is a finding of concern requiring notification for the Class II (improvements) constructed prior to 1979 (Mololani and Ulupau neighborhoods). Pa Honua 3 was recently constructed (2007) and interior application of pesticides were not performed.

Polychlorinated Biphenyls (PCBs). Fluorescent light ballasts that contain PCBs may be present within the housing units constructed prior to the ban on PCB manufacturing in 1979 (Mololani and Ulupau neighborhoods). Since this building material is not regulated under CERCLA, no ECP category is assigned to this material. However, PCB containing light ballasts require proper handling and disposal during demolition and renovations, and they are addressed in this EBS for disclosure purposes.

Radon. Recent radon screening of the Mololani and Ulupau neighborhoods indicated radon levels below 4 picocuries per liter (pCi/L). No further radon testing is required for the remaining lifetime of these units. If these units are replaced in the future, radon screening would be required. Radon screening of the newly constructed Pa Honua 3 neighborhood has not been performed but is recommended.

Stormwater. Nine Mololani housing units (1766, 2028, 2030, 2070, 2076, 2163, 2178, 2180, 2212) have been impacted by erosion issues due to heavy rains. During storm events, soil carried by runoff is deposited around the units.

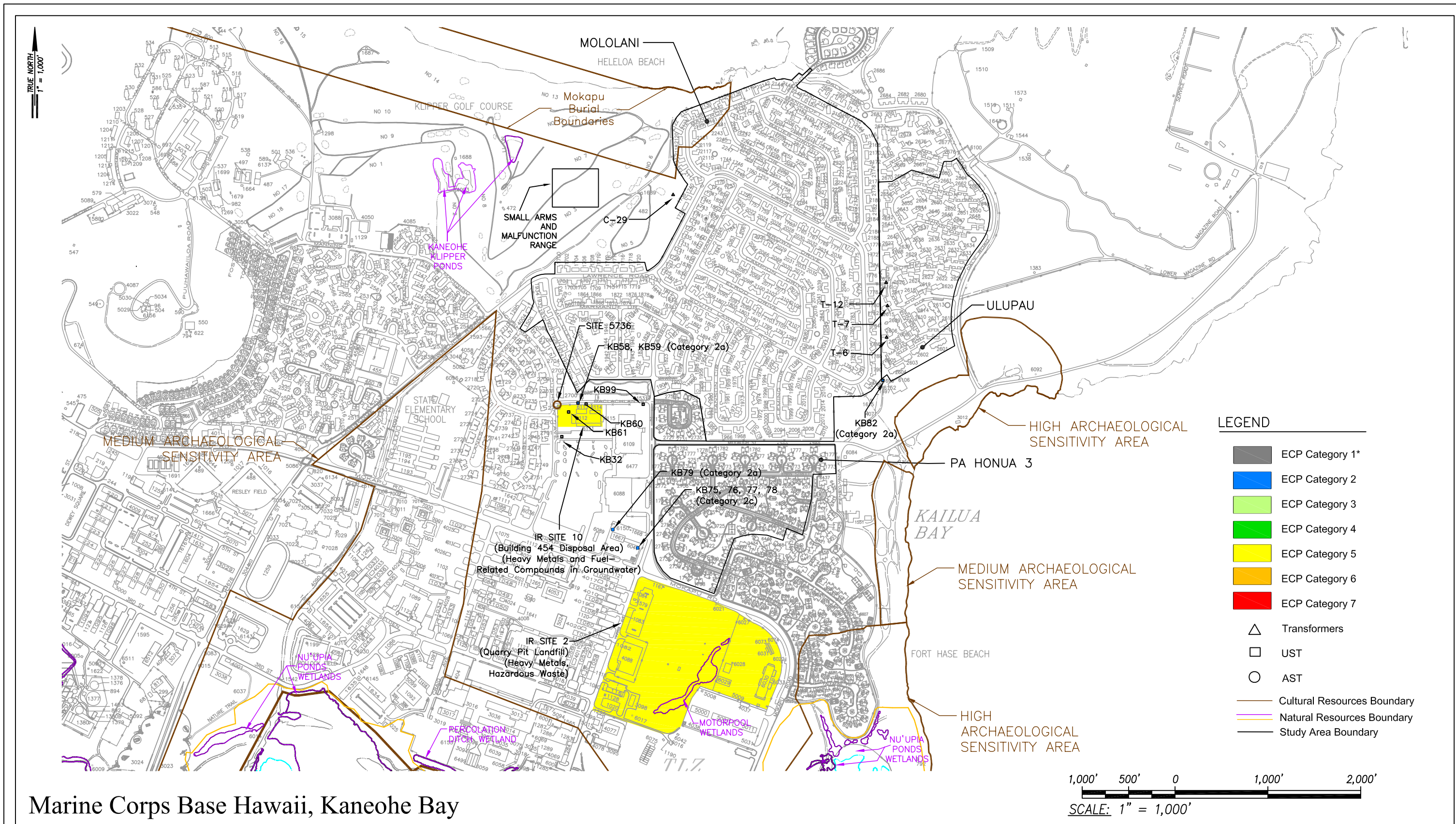
Other Environmental Concerns - Cultural Resources. The 634 housing units within the Mololani neighborhood are eligible for listing in the NRHP under Criterion C as properties embodying distinctive characteristics of family housing construction after World War II. The Mololani neighborhoods were constructed as part of the nationwide Capehart - Wherry Military Family Housing Program. A Program Comment issued by the Advisory Council on Historic Preservation (ACHP) in 2004 suggests that Wherry and Capehart Era (1949-1962) family housing may be eligible for listing in the NRHP. The Department of the Air Force and the Department of the Navy published their acceptance of the Program Comment in the Federal Register on November 18, 2005. The nationwide historic context, *Housing an Air Force and a Navy: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962)* (June 2007), identified no units of Particular Importance at military installations in the state of Hawaii including MCBH.

A complete summary of the findings of concern requiring notification for the Subject Property along with the ECP category for each item is provided in Table ES-1. The locations of significant findings (Category 1 and higher) are shown on Figure ES-1.

Table ES-1. Environmental Condition of Property

Housing Area	Status	Date Built/ Occurrence	Former/ Current Use	Property Class	Property Categorization Factors and Disclosure Factors					Disclosure Factors													
					ECP	AUP	HS/HM/ HW	IR	Lead in Soil	Air	ACM	Cult Res	Land- fill	LBP	MW/ BW	Nat Res	Ord	Pest/ Herb	PCB	Potable Water	RM/ MW	Radon	WW/ SW
MOLOLANI Consists of 210 duplex buildings and 214 single buildings comprising 634 family units	Existing	1959/1960	Family Housing	II (improve- ments)	1	1 N	1 Y	1 N	NA	N	Y	N	N	Y	N	N	N	Y	Y	N	N	Y	WW-N SW-Y ①
				I (land)	1	1 N	1 N	1② N	1 Y④	N	Y	Y	N	NA	N	Y	N	Y	N	N	N	N	
PA HONUA 3 Consists of 106 duplex buildings comprising 212 family units	Existing	2007	Family Housing	II (improve- ments)	1	1 N	1 N	1 N	NA	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
				I (land)	1	1 N	1 N	1 ③ N	1 Y	N	Y	N	N	NA	N	Y	N	Y	N	N	N	N	N
ULUPAU Consists of 65 buildings comprising 296 housing units and 103 carports	Existing	1976	Family Housing	II (improve- ments)	1	1 N	1 Y	1 N	NA	N	Y	N	N	Y	N	N	N	Y	Y	N	N	Y	N
				I (land)	1	1 N	1 N	1 N	1 Y ④	N	Y	N	N	NA	N	Y	N	Y	N	N	N	N	N
<div>ACM AUP Cult Res ECP</div> <div>asbestos-containing material AST, USTs, and petroleum products cultural resources environmental condition of property</div> <div>HM HS HW IR</div> <div>hazardous materials hazardous substances hazardous wastes installation restoration</div> <div>N NA Nat Res MW/BW Ord</div> <div>No not applicable natural resources medical waste/biohazardous waste ordnance</div> <div>PCB Pest/Herb RW/MW WW/SW Y</div> <div>polychlorinated biphenyl pesticides/herbicides radioactive wastes/mixed wastes wastewater/stormwater Yes</div>																							
Note: The highest category assigned to a property categorization factor at a building/property determines the overall ECP category. Disclosure factors do not affect the overall ECP category of a building property																							
①. Finding of Concern for Housing Units: 1766, 2028, 2030, 2070, 2076, 2163, 2178, 2180, 2212.																							
②. IR site located on adjacent property – Building 454 Disposal Area (IR Site 10, Category 5).																							
③. IR site located on adjacent property – Quarry Pit Landfill (IR Site 2, Category 5).																							
④. No “community-wide” lead in soil issues based on Lead Risk Assessment; however, there may be isolated incidences of lead in soil throughout neighborhood.																							

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1. INTRODUCTION AND PURPOSE

1.1. INTRODUCTION

The United States (U.S.) Department of the Navy (DoN), Naval Facilities Engineering Command, Pacific (NAVFAC PACIFIC) requested the performance of this Environmental Condition of Property (ECP) to facilitate the housing public-private venture (PPV) between the DoN and “best qualified” developer. The ECP study area consists of three U.S. Marine Corps (USMC) neighborhoods within the Marine Corps Base Hawaii (MCBH) Kaneohe Bay (Figure 1-1).

The ECP study area, hereinafter known as the Subject Property, consists of the following Class I (land) and Class II Property (improvements) located throughout the following neighborhoods (Figure 1-2):

1. Mololani
2. Pa Honua 3
3. Ulupau, central and south portion of

The environmental condition of the Subject Property was evaluated in accordance with Department of Defense (DoD) policy for real estate transactions (DoD 1993, 1994, and 1997).

1.2. PURPOSE

The purpose of an ECP is to provide an evaluation of existing environmental conditions for a specific real property. In this case, the ECP was conducted to facilitate the lease of land that the housing units are located (Class I Property) and to facilitate the ownership transfer of the housing units (Class II Property). The Class I and Class II Property combined (the Subject Property) is owned by the Government and is located within MCBH Kaneohe Bay, Oahu, Hawaii. An ECP consists of gathering sufficient data to: (1) document existing environmental conditions at the Subject Property, (2) identify areas of potential environmental concern, and (3) classify the Subject Property based on its environmental condition.

1.3. DESCRIPTION OF SUBJECT PROPERTY

MCBH Kaneohe Bay is located on the windward side of Oahu, and occupies the entire 2,951 acre Mokapu Peninsula. The Subject Property, as referred to in this ECP, consists of three housing neighborhoods located in the northeastern portion of MCBH Kaneohe Bay and the land beneath such neighborhoods. MCBH Kaneohe Bay is located approximately 13.5 miles northeast of Honolulu. The Subject Property occupies Tax Map Key (TMK) numbers 4-4-08:001, 4-4-09:003 and 4-4-11:001. The location of the Subject Property is shown in Figure 1-1. A site layout is shown in Figure 1-2.

MCBH Kaneohe Bay is bordered to the west by Kaneohe Bay, to the north by the Pacific Ocean, to the east by Kailua Bay, and to the south by fishponds. South of the fishponds, the Property is bordered by Kaneohe Bay Drive, the City and County of Honolulu (CCH)

Kailua Regional Wastewater Treatment Plant, and the residential communities of Kaneohe and Kailua.

1.4. SCOPE OF SURVEY

The scope of this ECP consisted of: (1) a review of literature and agency records to document incidents or operations that may have impacted the environmental condition of the Subject Property; (2) a cursory review of previous landowners within the past 50 years to review the potential for environmental concerns that may have occurred from past ownership; (3) interviews with individuals who might have knowledge of current or past operations that may have impacted the environmental condition of the Subject Property; and (4) a site reconnaissance.

The ECP investigated the following potential environmental conditions:

- aboveground/underground storage tanks (AST/UST, respectively) and petroleum-related structures (AUP);
- asbestos-containing materials (ACM);
- hazardous substances/hazardous materials/hazardous wastes (HS/HM/HW);
- heavy metals;
- landfills;
- lead-based paint (LBP);
- medical/biohazardous waste (MW/BW);
- mixed waste;
- operationally contaminated/Installation Restoration (IR) sites;
- ordnance/unexploded ordnance (UXO);
- pesticides/herbicides;
- polychlorinated biphenyls (PCBs);
- potable water;
- radioactive material;
- radon;
- wastewater and stormwater (WW/SW);
- natural resources;
- cultural resources; and
- other environmental concerns.

Lead surveys and lead risk assessments have been conducted for the housing neighborhoods as part of this project and from previous investigations involving other areas within MCBH Kaneohe Bay. The findings of the lead surveys and lead risk assessments are incorporated into the findings of this ECP.

This ECP report documents findings and provides an assessment of the environmental condition of the Subject Property with respect to the proposed real estate action. Based on an analysis of the available data, property and facilities within the Subject Property were classified into one of the following seven ECP categories to assess whether the Subject Property or a portion of the Subject Property is suitable for transfer, lease, or license. The seven ECP categories are described in the September 1996 Addendum to the Fall 1995 BCP Guidebook (DoD 1996). However, Category 2 has been subdivided into five subcategories to define the type of petroleum release and current site status.

Category 1: Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).

Category 2: Areas where only release or disposal of petroleum products has occurred.

- **Category 2a.** Facilities where release, disposal, and/or migration of petroleum products have occurred, but at concentrations that do not require a response action.
- **Category 2b.** Facilities where release, disposal, and/or migration of petroleum products have occurred, and all response actions to protect human health and the environment have been taken.
- **Category 2c.** Facilities where release, disposal, and/or migration of petroleum products have occurred, and response actions are under way, but all required response actions have not been completed.
- **Category 2d.** Facilities where release, disposal, and/or migration of petroleum products have occurred, but required response actions have not yet been implemented.
- **Category 2e.** Facilities that have never been evaluated or require additional investigation. Category 2e facilities include areas that may have had a release of petroleum products, but have had no sampling or field screening and require such investigations to confirm that a release has or has not occurred.

Category 3: Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response.

Category 4: Areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions to protect human health and the environment have been taken.

Category 5: Areas where release, disposal, and/or migration of hazardous substances has occurred, and removal or remedial actions are underway, but all required remedial actions have not yet been taken.

Category 6: Areas where release, disposal, and/or migration of hazardous substances has occurred, but required actions have not yet been implemented.

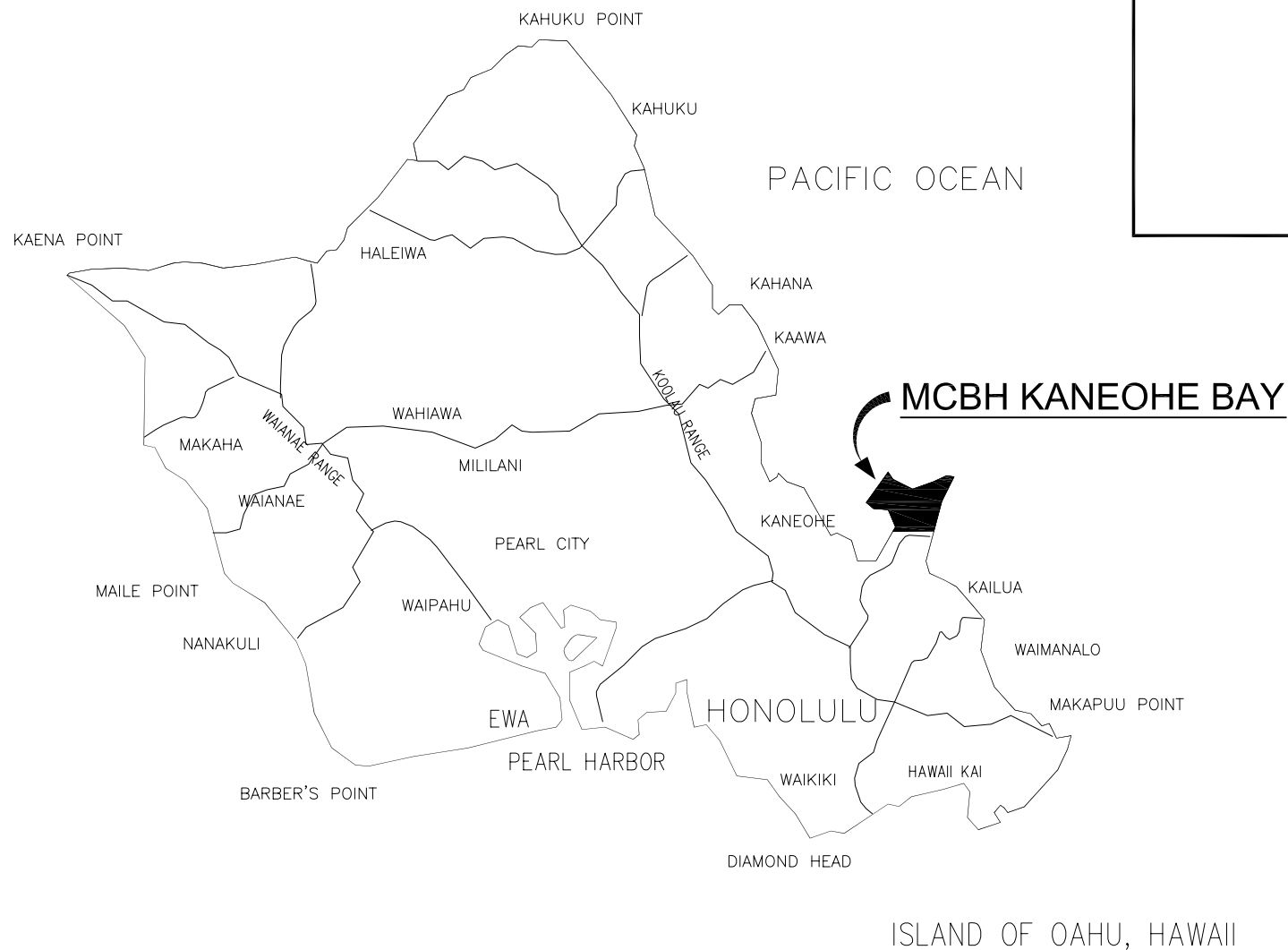
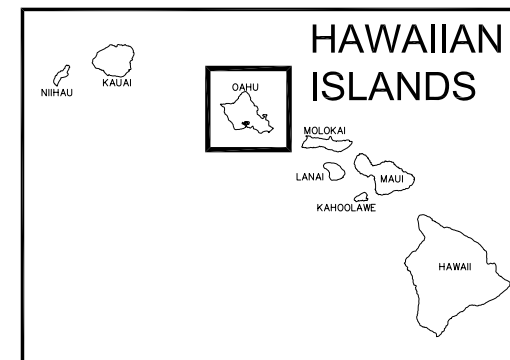
Category 7: Areas that are not evaluated or require additional evaluation.

Information on environmental issues (e.g., storage tanks and hazardous substances) was reviewed to determine the presence and status of each issue. Each issue was first categorized based on its past or present potential for environmental concern. Then, the categories for all the factors present at each location were considered to determine the overall property category.

1.5. REPORT ORGANIZATION

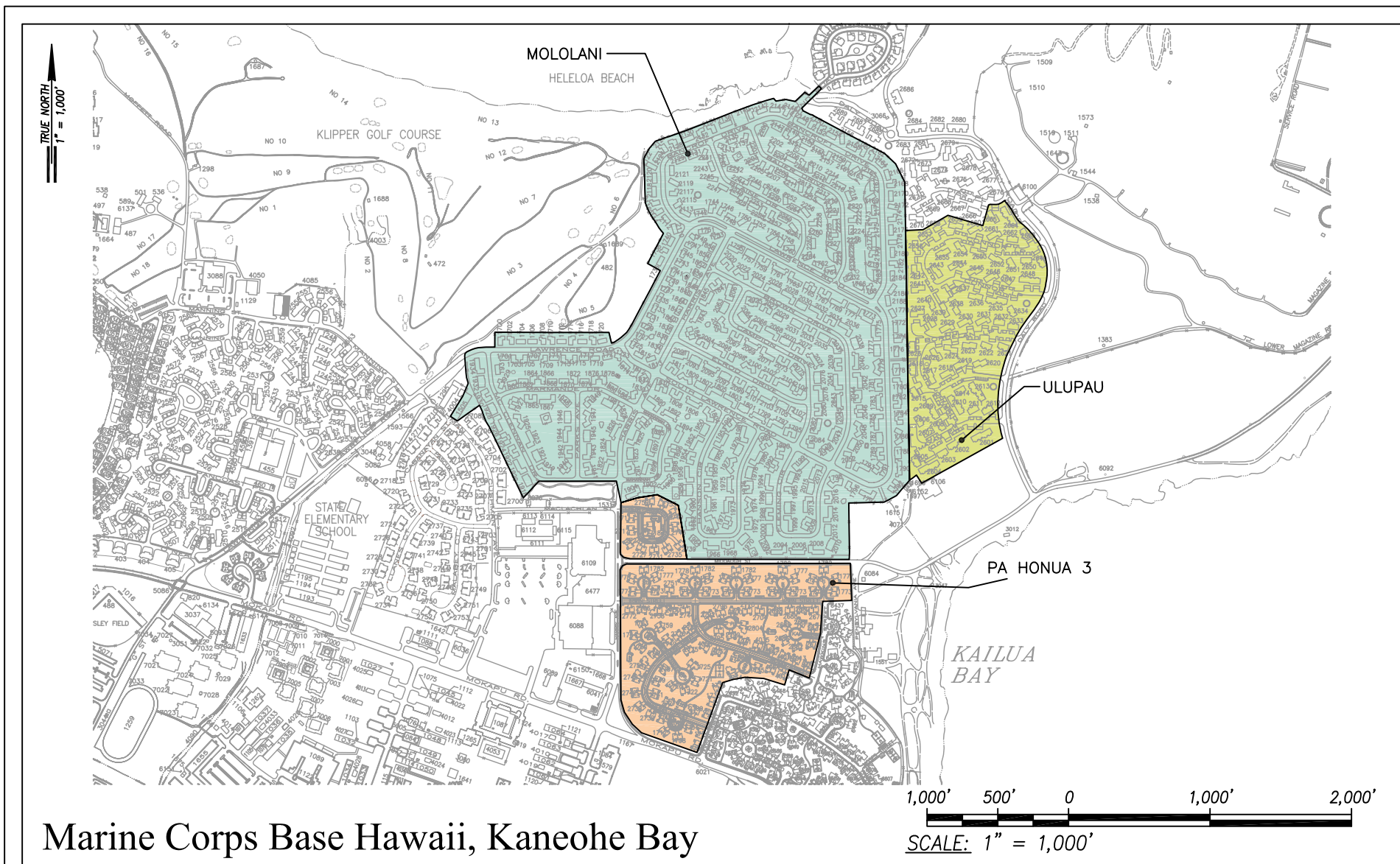
This ECP report is broken into eight sections with a separate section of findings for each housing neighborhood. An overall property category designation of the Subject Property is provided after the neighborhood findings. Description of the historical use and physical settings for MCBH Kaneohe Bay is provided in Appendix A. The report sections are as follows:

- Section 1: Introduction and Purpose
- Section 2: Survey Methodology
- Section 3: Land Use, Findings, and Conclusions for the Mololani Neighborhood
- Section 4: Land Use, Findings, and Conclusions for the Pa Honua 3 Neighborhood
- Section 5: Land Use, Findings, and Conclusions for the Ulupau Neighborhood
- Section 6: Property Category Designation
- Section 7: Recommended Notifications, Covenants, and Restrictions
- Section 8: Certification
- Section 9: References



ENVIRONMENTAL CONDITION OF PROPERTY		
	HAWAII PPV HOUSING PHASE 4 PROJECT SITE LOCATION MAP	FIGURE 1-1

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ENVIRONMENTAL CONDITION OF PROPERTY

HAWAII PPV HOUSING PHASE 4
SITE LAYOUT

FIGURE
1-2

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2. SURVEY METHODOLOGY

2.1. DESCRIPTION OF DOCUMENTS REVIEWED

DoN and USMC records, regulatory agency databases and public records were reviewed for information regarding potential environmental concerns on the Subject Property and surrounding areas. Historical information on each facility within the Subject Property was obtained from reviewing previous environmental and activity reports. Copies of the material referenced in this document are included in Appendix B.

2.1.1. Regulatory Agency Records

A regulatory database search service, Environmental Data Resources, Inc. (EDR), was used to review federal and state government databases of known or potential sources of environmental concern. The reports provided by EDR (EDR 2006) are attached in Appendix C.

EDR searched for incidents or sites within the listed minimum search distances of the Subject Property. The report meets the government record search requirements of American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments, E 1527-05 (ASTM 2005). The databases searched and search distances are summarized in Table 2-1 (at the end of this section).

2.1.2. Navy and U.S. Marine Corps Records

Available records for the Subject Property, including a number of environmental reports, were reviewed. Examined records are documented on the reference forms in Appendix B. Information relevant to the investigation is discussed and referenced in this report.

2.2. SITE RECONNAISSANCE

Site visits to the Subject Property were conducted in April 2007. Site reconnaissance field notes are included in Appendix E and photographs are included in Appendix F.

2.3. INTERVIEWS

Representatives of the MCBH Kaneohe Facilities Department, MCBH Kaneohe Family Housing Department, and MCBH Environmental Compliance and Protection Department (MECPD) were interviewed to obtain current and historical information on the Subject Property. The following persons answered questions about the Subject Property, surrounding areas, and potential environmental concerns.

1. (b) (6), MECPD, Environmental Compliance Inspector, (b) (6);
(b) (6);
2. (b) (6), MECPD, Pesticides point of contact (POC), (b) (6);
(b) (6);

3. (b) (6), MCBH Family Housing Department, Housing Management POC, (b) (6);
4. (b) (6), NAVFAC Hawaii, RPM, (b) (6);
5. (b) (6), MECPD, Cultural Resources POC, (b) (6);
6. (b) (6), MECPD, Natural Resources POC, (b) (6);
7. (b) (6), MECPD, IR Program, PCB, asbestos, LBP POC, (b) (6);
8. (b) (6) MECPD, UST, AST, National Pollutant Discharge Elimination System (NPDES) Permits POC, (b) (6);
9. (b) (6), MCBH Pest Control POC, (b) (6);
10. (b) (6) MCBH Environmental, POC for satellite accumulation site;
11. (b) (6) MECPD ERP Project Manager, (b) (6);
12. (b) (6), MCBH Family Housing Department, Building Maintenance Supervisor, (b) (6);
13. (b) (6), MECPD, Cultural Resource Management Specialist, (b) (6);
14. (b) (6) MECPD, Radon POC, (b) (6);
15. (b) (6) MCBH Family Housing, Engineering Department POC for CADD (b) (6);
16. (b) (6), MECPD Natural Resources Wildlife Specialist, (b) (6);

Records of discussion are included in Appendix D.

Table 2-1. Search Distances for Environmental Record Sources

Environmental Record Sources	Minimum Search Distance (miles)
Federal NPL Site List	1.0
Federal Proposed NPL sites	1.0
Federal Delisted NPL	1.0
Federal NPL Liens	Target property
Federal CERCLIS	0.5
Federal CERCLIS – NFRAP	0.5
Federal CORRACTS	1.0
Federal RCRIS-TSD	0.5
Federal RCRIS-LQG	0.25
Federal RCRIS-SQG	0.25
Federal ERNS	Target property
Federal HMIRS	Target property
Federal US ENG CONTROLS	0.5
Federal US INST CONTROL	0.5
Federal Department of Defense Sites	1.0
Federal FUDS	1.0
Federal US Brownfields	0.5
Federal CONSENT	1.0
Federal ROD	1.0
Federal UMTRA	0.5
Federal ODI	0.5
Federal TRIS	Target property
Federal TSCA	Target property
Federal FTTS	Target property
Federal SSTS	Target property
Federal PADS	Target property
Federal MLTS	Target property
Federal MINES Master Index File	0.25
Federal FINDS Program Summary Report	Target property
Federal RAATS	Target property
State SHWS	1.0
State Permitted Landfills in the State of Hawaii	0.5
State LUST Database	0.5
State UST Database	0.25
State SPILLS	Target property

Environmental Record Sources	Minimum Search Distance (miles)
State INST CONTROL	0.5
State Voluntary Response Program	0.5
State Brownfields	0.5
Federal Former Manufactured Gas (Coal Gas) Sites	1.0

Notes:

CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CONSENT	Consent Decrees
CORRACTS	Corrective Action Report
DoD	Department of Defense
ENG CONTROLS	Engineering Controls
ERNS	Emergency Response Notification System
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FINDS	Facility Index System/Facility Identification Initiative
FTTS	FIFRA/TSCA Tracking Systems
FUDS	Formerly Used Defense Sites
HMIRS	Hazardous Material Information Reporting System
INST CONTROL	Institutional Controls
LUST	Leaking Underground Storage Tank
LQG	Large Quantity Generator
MINES	Mines Master Index File
MLTS	Material Licensing Tracking System
NFRAP	No Further Remedial Action Planned
NPL	Federal National Priorities List
ODI	Open Dump Inventory
PADS	PCB Activity Database System
RAATS	RCRA Administrative Action Tracking System
RCRIS	Resource Conservation and Recovery Information System
ROD	Records of Decision
SHWS	State Hazardous Waste Sites
SPILLS	Release Notifications
SQG	Small Quantity Generator
SSTS	Section 7 Tracking Systems
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
TSD	Treatment Storage and Disposal
UMTRA	Uranium Mill Tailings Sites
US	United States
UST	Underground Storage Tank

3. LAND USE, FINDINGS, AND CONCLUSIONS FOR THE MOLOLANI NEIGHBORHOOD

3.1. HISTORICAL LAND USE

The historical land use for the entire MCBH Kaneohe Bay is provided in the background information in Appendix A. This section presents the specific land use history for the Mololani neighborhood. The information regarding past and current uses of the neighborhood was obtained from a review of historical sources, such as aerial photographs, DoN records, and previous investigations on and around the neighborhood. Aerial photographs were reviewed at R.M. Towill Corporation (RMTC). Aerial photographs of the neighborhoods were dated 1953, 1968, 1969, 1990, 1991, 1992, 1998 and 1999 (RMTC). No aerial photographs were available before 1953 and after 1999.

MCBH Kaneohe Bay housing records of the Mololani neighborhood indicate that 231 homes were constructed in 1959 and 403 homes were constructed in 1960. Ten (10) homes were then demolished, but not replaced, as part of a military housing construction replacement project (Project Number H-543) (personal communication (b) (6) 2007). The earliest available aerial photograph from 1953 includes all but a small part of the northern portion of Mololani (approximately at Bancroft Drive). The majority of the area is undeveloped with vegetation. Maclachlan Street extends further east than at present, and is located north and parallel to Middaugh Street. Harris Avenue is present and extends further north than at present. Two other roads (possibly Daly Road) extend through the area and then to the northwest. Approximately twelve buildings are located on the north side of Maclachlan Street. The 1968 aerial photograph shows the neighborhood developed in its current configuration. No major changes to the Mololani neighborhood were observed in the subsequent aerial photographs.

3.2. CURRENT LAND USE

MCBH Kaneohe Bay housing records of the Mololani neighborhood indicate that 231 homes were constructed in 1959 and 403 homes were constructed in 1960. The neighborhood currently consists of 210 duplex buildings (420 homes) and 214 single-family homes totaling 634 homes with attached carports (Figure 3-1, at the end of this section). The neighborhood currently serves as residential housing for Company, Field, and Senior Grade Officers, Junior, Staff and Senior Enlisted.

The structures are constructed using a combination of concrete masonry units (CMUs) and tongue and groove wood paneling, built on a concrete slab-on-grade foundation. The exterior surfaces have been enclosed with multi-colored vinyl siding. The roof is wood framed, built up style roofing, with an asphalt shingle cap layer. A combination of canec, wood, and drywall paneling separates the attic spaces from the interior rooms of the housing units. The interior floor coverings vary from unit to unit, usually consisting of 12-inch by 12-inch vinyl floor tiles, ceramic tiles, or carpeting.

3.3. DATABASE SEARCH RESULTS

Regulatory databases were searched for indications of environmental concerns that may affect the Subject Property. The databases were searched by EDR; their report is contained in Appendix C and findings for the Mololani neighborhood are summarized in Table 3-1 (at the end of this section).

3.4. FINDINGS OF CONCERN

3.4.1. On-Site Findings Requiring Notification

The on-site findings of concern that require notification for the Mololani neighborhood include the following potential environmental conditions:

ACM – An asbestos management plan was prepared in April 1997, which included an asbestos survey of 56 housing units within the neighborhood (DoN 1997a). The asbestos survey identified the following ACM inside the housing units: Sprayed-on sink undercoating applied to kitchen sinks, linoleum, and tiled flooring and the mastic adhesives. The exterior ACM components identified consists of transite piping, roofing tar and rolled roofing paper found on the exterior of the housing units. Window glazing used to secure glass panes in double hung windows were also identified as ACM. However, all windows throughout the Mololani neighborhood have been replaced with vinyl window casings. The ACM Hazard Assessment (HA) for the neighborhood designated the sink undercoating, flooring with mastic adhesive, transite piping, and the roofing materials as Level 5, ACM with low friability and no damage and non-friable ACM. The response action recommended for these ACM was operation and maintenance (O&M). The pipe insulation in the attic was designated as Level 1, requiring short-term action (DoN 1997a).

In addition, demolition of similar military housing on Oahu has identified other ACM that may not be readily accessible or visible during a routine ACM survey (i.e. non-demolition survey). ACM may also be present in the housing units within mastic for rubber base boards, drywall joint compound, ceiling acoustical tiling, and asbestos coated pipes in concrete foundations (personal communication, (b) (6) 2006 and Sandra Ragley 2006). ACM may also be present in underground transite piping. This finding is an area of concern pertaining to the Class I Property (land) and Class II Property (improvements).

Since ACM hazards are not regulated under CERCLA, no ECP category is assigned to ACM hazards; however, they are addressed in this ECP for disclosure purposes.

HS/HM/HW – The housing units are reported to have canec ceilings (DoN 2007a). Canec is a wood fiber made from sugar cane stalks and is known to contain arsenic. Due to the age of the development, housing units could also have mercury and lead-containing fluorescent light tubes, mercury-containing switches, and ODS-containing appliances (DoN 2006b). These materials require proper handling and disposal during demolition and renovations. These findings are an area of concern pertaining to the Class II Property (improvements).

LBP – In 2007, 56 of the 634 housing units within the neighborhood were inspected for LBP. Based on the U.S. Department of Housing and Urban Development (HUD)

Guidelines, 22 component types met the criteria for community-wide³ lead-based painted surfaces (DoN 2007a). Additionally, 32 components met the criteria for isolated instances of lead-based paint surfaces in 21 units (1775-A, 1782-A Lawrence Road; 1789-A, 1812 South Lawrence Road; 1821-B, 1825-A Harris Avenue; 1881-A Marmande Drive; 1962-A, 1964-A, 1966-B, 1971-B, 1978-A, 1978-B Hanson Circle; 1990-A, 1994-A, 2009-B, 2016-A Fleming Circle; 2027-B Brown Drive; 2082-A Campion Drive; 2122 Bancroft Drive; 2210 Bauer Drive). In addition, 111 painted surfaces from 18 playgrounds within the Mololani Housing Area were tested for LBP. All surfaces tested negative for LBP.

Twenty-six (26) housing units were selected for lead risk assessments and the majority of the surfaces were considered intact (DoN 2007a). However, the following five exterior components were identified as damaged and recommended for restoration or removal per HUD O&M Guidelines: Metal Attic Vent, Metal Pipe, Wood Storage Ceiling, Wood Storage Rafter, and Wood Support Beam. This finding is an area of concern for the Class II Property (improvements).

Dust wipe samples collected from the floors and window troughs of the 26 housing units selected for lead risk assessments concluded that a community-wide dust lead hazard does not exist on the bare floors or window troughs.

Since LBP hazards are not regulated under CERCLA, no ECP category is assigned to LBP hazards; however, they are addressed in this ECP for disclosure purposes.

Lead in Soil – The lead in soil concentrations around the perimeter of the housing units indicate lead is present at concentrations ranging from <40.0 to 87 milligrams per kilograms (mg/kg), with no soil samples exceeding the HUD and EPA action level of 400 mg/kg. The average lead in soil concentration from the perimeter of the units that were assessed was 46 mg/kg. The playgrounds within the neighborhood were of new construction with synthetic ground covering for added safety and to minimize lead exposure via contact through bare soil. No “community-wide” lead in soil issues based on Lead Risk Assessment; however, there may be isolated incidences of lead in soil throughout neighborhood due lead-based paint being historically used at the site.

Pesticides/Herbicides – According to housing management, pesticides/herbicides have been legally applied to the interior and exterior of the homes at MCBH Kaneohe Bay to control various pests and plants. There is also a very strong possibility that chlordane was applied beneath housing floor slabs in the past for termite protection. Additionally, chlordane was also used as a lawn and garden insecticide up until 1978, so there is a possibility that it could be in other areas besides under slabs. Prior sampling confirms that pesticides/herbicides are present in soils at various locations within MCBH housing areas (Kauai Environmental 2005, 2006 and White Environmental 2005). The presence of the pesticide residues in the soil is the result of past application of the chemicals on site rather than the result of a spill or other type of

³ If the number of positive readings per component type exceeded 15% then the component type was classified as a “community-wide” LBP component. If the number of positive readings per component type fell within the range of one to 14% then the component type was classified as an “isolated” LBP component. If there were no positive readings per component type then the component type was classified as negative.

release (DoN 2006b). This finding is an area of concern for the Class II Property (improvements) and the Class I Property (land).

PCBs – Due to the age of the development, housing units could have polychlorinated biphenyl (PCB)-containing fluorescent light ballasts. This material requires proper handling and disposal during demolition and renovations. This finding is an area of concern pertaining to the Class II Property (improvements).

Radon – Recent radon screening of the Mololani neighborhood indicated radon levels below EPA's action level of 4 picocuries per liter (pCi/L). No further testing is required for the remaining lifetime of these units. If these units are replaced in the future, radon screening would be required (Oak Ridge National Laboratory [ORNL] 2007).

Stormwater - The Mololani housing units 1766, 2028, 2030, 2070, 2076, 2163, 2178, 2180 and 2212 have been impacted by heavy rains in the past. This has been identified as a finding of concern for the Class II property (improvements).

Other Environmental Concerns – The northern portion of the neighborhood is located within a cultural resource site, the Mokapu Burial Area (Figure 3-1). The Mokapu Burial Area consists of the dunes along North Beach and the site is listed in the National Register of Historic Places. This site was the location of a traditional Hawaiian burial ground where close to 1,600 human burials have been recovered (DoN 2006a). Approximately 15 homes are currently sited in the Mokapu Burial Area. No new houses can be constructed within the Mokapu Burial Area nor within the High Sensitivity Zone adjacent to the burial area. This finding is an area of concern pertaining to Class I (land).

Any landscaping or plant species alterations in all privatized housing areas must be reviewed and approved by MCBH Environmental Department for adherence to requirements in the MCBH INRMP/EA (2001) as updated in the MCBH INRMP (2006), Appendix D and component Master Landscaping guidelines published in 2002 as part of the government-driven MCBH INRMP implementation process. Prior to any ground disturbance, proposed action must be reviewed by the MCBH Environmental Department (DoN 2006b, USMC 2006). This finding is an area of concern pertaining to Class I (land).

Erosion control measures need to be addressed prior to any ground disturbance and the final NPDES permit must be submitted to the MCBH Environmental Department (DoN 2006b). This finding is an area of concern pertaining to Class I (land).

The ECP categories for these environmental conditions requiring notification along with detailed descriptions of the findings are presented in Table 3-1 (at the end of this section). The locations of the various sites identified are shown on Figure 3-1 (at the end of this section).

3.4.2. Off-Site Findings Requiring Notification

One off-site finding of concern was identified for the Mololani neighborhood. IR Site 10 (Building 454 Disposal Area) is located near the corner of Cushman Avenue and Maclachlan Street adjacent to the east of the neighborhood (Figure 3-1). A SI was completed at this site in 1993. This site has been assigned an IR Program ranking of

Category 5 (DoN 2006b). The site has fuel-related compounds and heavy metal concerns in the groundwater (DoN 1993). This finding is an area of concern for the Class I Property (land).

3.5. FINDINGS OF NO CONCERN

3.5.1. On-Site Findings Not Requiring Notification

The on-site findings that do not require notification for the Mololani neighborhood include the following potential environmental conditions:

Air – No air issues were identified within the neighborhood.

AUP – No AUP sites were identified within the neighborhood.

Landfills – No landfill sites were identified within the neighborhood.

MW/BW – No MW/BW sites were identified within the neighborhood.

Mixed Waste – No mixed waste sites were identified within the neighborhood.

Operationally Contaminated/IR Sites – No operationally contaminated or IR sites were identified within the neighborhood.

Ordnance/UXO – No ordnance/UXO sites were identified within the neighborhood.

PCBs – A total of 55 pole mounted electrical transformers are located within the Mololani neighborhood. MCBH facility records indicate that all but one transformer (C-29) were installed after 1979 (DoN 2005). Currently, all transformers at MCBH do not contain PCB's (personal communication, (b) (6) 2007). In January 2005, soil samples were collected from the area around of the base of the transformer C-29 for PCB analyses. No PCBs were detected in any of the samples collected (DoN 2005).

Potable Water – Potable water is supplied to the subject site via the City and County of Honolulu Board of Water Supply and no production, monitoring, or underground injection control (UIC) wells are reported at MCBH Kaneohe Bay (DoN 2005; EDR 2006).

Radioactive Material – No radioactive material sites were identified within the neighborhood.

Wastewater – The housing units are connected to the sewer collection system that connects to the MCBH Kaneohe Wastewater Reclamation Facility (personal communication, Mr. Jeffrey Larson 2007).

Other Environmental Concerns – The 634 housing units within the Mololani neighborhood are eligible for listing in the NRHP under Criterion C ⁴, as properties embodying distinctive characteristics of single family housing construction after World War II. The Mololani neighborhoods were constructed as part of the nationwide

⁴ Criterion C deals with properties whose significance is derived from its architectural, engineering, and/or physical attributes.

Capehart - Wherry Military Family Housing Program. A Program Comment issued by the Advisory Council on Historic Preservation (ACHP) in 2004 suggests that Wherry and Capehart Era (1949-1962) family housing may be eligible for listing in the NRHP. The Department of the Air Force and the Department of the Navy published their acceptance of the Program Comment in the Federal Register on November 18, 2005. The nationwide historic context, *Housing an Air Force and a Navy: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962)* (June 2007), identified no units of Particular Importance at military installations in the state of Hawaii including MCBH.

The ECP categories for these environmental conditions not requiring notification along with detailed descriptions of the findings are presented in Table 3-1 (at the end of this section).

3.5.2. Off-Site Findings of No Concern

Besides the IR Site 10, there are no other environmental concerns at adjacent properties that would likely impact the Mololani neighborhood (EDR 2006). Eight former USTs, KB 32, KB 58, KB 59, KB 60, KB 61, and KB 99, were located within 1,000 feet south and west of the neighborhood. One former UST, KB 82, was located within 1,000 feet south and east of the neighborhood. All USTs have been removed and no further action at this site is required (USACE 1994a, 1994b, 1994c, 1994d, 1999e; OHM 1997). These UST sites are not likely to impact the subject neighborhood.

A former Small Arms and Malfunction Range was located approximately 500 feet northwest of the neighborhood within the current golf course. No written documentation describing the range or activities on the range was found. Further investigation is ongoing for this area (USACE 2001).

MCBH facility records indicate that three Transformers T-6, T-7, and T-12 were installed in 1975 and could have contained PCBs in the past. In January 2005 soil and wipe samples were collected from the area around the base of each of the three transformers for PCB analyses. No PCBs were detected in any of the samples collected (DoN 2005).

In addition to the FEMA-identified flood hazard areas, MCBH conducted a study to refine the flood hazard areas associated with the Mokapu Central Drainage Channel (MCDC), and establish more clearly defined limits of the 100-year flood zones. As a result, the area adjacent to the southwest border of the neighborhood was determined to be within the area affected by the 100-year storm event (DoN 2006a).

Table 3-1.
On-Site Findings
Mololani Neighborhood, MCBH Kaneohe Bay

Environmental Condition	Class	Finding of Concern (ECP)	Description
Air	Class II Property (improvements) (634 housing units)	No	No air issues were identified within the neighborhood.
	Class I Property (land)	No	
Asbestos-Containing Materials	Class II Property (improvements) (634 housing units)	Yes	<p>An asbestos management plan was prepared in April 1997, which included an asbestos survey of 56 housing units within the neighborhood. The asbestos survey identified the following ACM inside the housing units: Sprayed-on sink undercoating applied to kitchen sinks, linoleum, and tiled flooring and the mastic adhesives. The exterior ACM components identified consists of transite piping, roofing tar and rolled roofing paper found on the exterior of the housing units. Window glazing used to secure glass panes in double hung windows were also identified as ACM. However, all windows throughout the Mololani neighborhood have been replaced with vinyl window casings. The ACM Hazard Assessment (HA) for the neighborhood designated the sink undercoating, flooring with mastic adhesive, transite piping, and the roofing materials as Level 5, ACM with low friability and no damage and non-friable ACM. The response action recommended for these ACM was operation and maintenance (O&M). The pipe insulation in the attic was designated as Level 1, requiring short-term action.</p> <p>In addition, demolition of similar military housing on Oahu has identified other ACM that may not be readily accessible or visible during a routine ACM survey (i.e. non-demolition survey). ACM may also be present in the housing units within mastic for rubber base boards, drywall joint compound, ceiling acoustical tiling, and asbestos coated pipes in concrete foundations. ACM may also be present in underground transite piping</p>
	Class I Property (land)	Yes	
ASTs, USTs and Petroleum Products (AUP)	Class II Property (improvements) (634 housing units)	(Category 1)	No AUP sites were identified within the neighborhood.
	Class I Property (land)	(Category 1)	
Hazardous Substances / Hazardous Materials / Hazardous Wastes	Class II Property (improvements) (634 housing units)	Yes	The housing units are reported to have canec ceilings. Canec is a wood fiber made from sugar cane stalks and is known to contain significant levels of arsenic. Housing units could have mercury and lead-containing fluorescent light tubes, mercury-containing switches and ODS-containing appliances.
	Class I Property (land)	No	

**Table 3-1.
On-Site Findings
Mololani Neighborhood, MCBH Kaneohe Bay**

Environmental Condition	Class	Finding of Concern (ECP)	Description
Landfills	Class II Property (improvements) (634 housing units)	No	No landfill sites were identified within the neighborhood.
	Class I Property (land)	No	
Lead-Based Paint	Class II Property (improvements) (634 housing units)	Yes	A LBP survey was conducted on the neighborhood in 56 of the 634 housing units. Twenty-two (22) component types met the criteria for community-wide lead-based painted surfaces. Additionally, 32 components met the criteria for isolated instances of lead-based paint surfaces in 21 units. Dust wipe samples collected from the floors and window sills indicate lead-containing dust was present in small concentrations but at levels below the HUD and EPA Action Levels.
	Class I Property (land)	NA	
Lead in Soil	Class II Property (improvements) (634 housing units)	NA	The lead in soil concentrations around the perimeter of the housing units indicate lead is present at concentrations ranging from <40.0 to 87 milligrams per kilograms (mg/kg), with no soil samples exceeding the HUD and EPA action level of 400 mg/kg. No "community-wide" lead in soil issues based on Lead Risk Assessment; however, there may be isolated incidences of lead in soil throughout neighborhood due lead-based paint being historically used at the site.
	Class I Property (land)	Yes	
Medical Waste/ Biohazard Waste	Class II Property (improvements) (634 housing units)	No	No medical waste / biohazard waste sites were identified within the neighborhood.
	Class I Property (land)	No	
Mixed Waste	Class II Property (improvements) (634 housing units)	No	No mixed waste sites were identified within the neighborhood.
	Class I Property (land)	No	
Operationally Contaminated / Installation Restoration Sites	Class II Property (improvements) (634 housing units)	(Category 1)	No Operationally Contaminated / Installation Restoration sites were identified within the neighborhood.
	Class I Property (land)	(Category 1)	

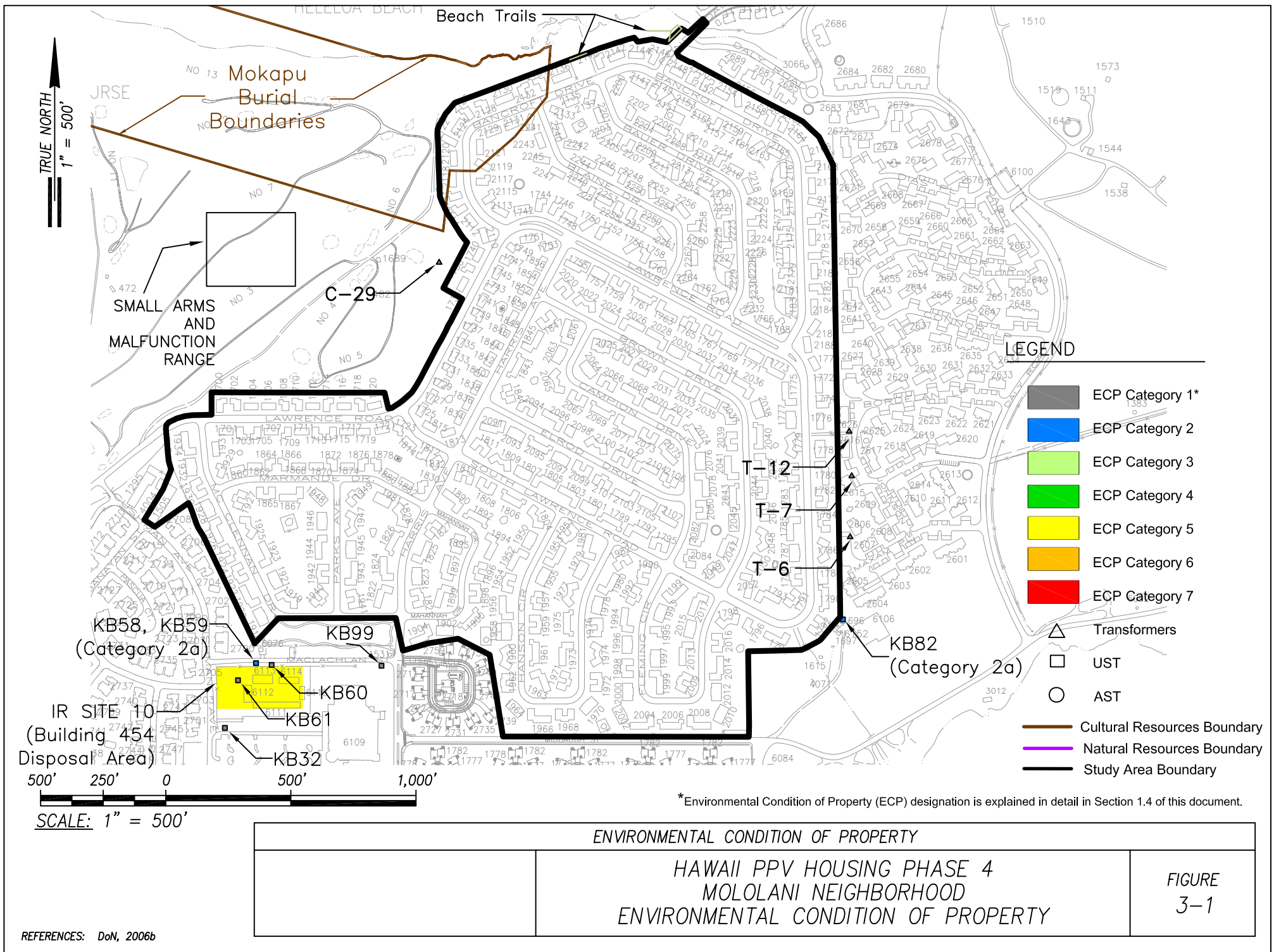
**Table 3-1.
On-Site Findings
Mololani Neighborhood, MCBH Kaneohe Bay**

Environmental Condition	Class	Finding of Concern (ECP)	Description
Ordnance / Unexploded Ordnance	Class II Property (improvements) (634 housing units)	No	No ordnance / unexploded ordnance sites were identified within the neighborhood
	Class I Property (land)	No	
Pesticides / Herbicides	Class II Property (improvements) (634 housing units)	Yes	Pesticides/herbicides have been legally applied to control various pests and plants. There is also a very strong possibility that chlordane was applied beneath housing floor slabs in the past for termite protection. Additionally, chlordane was also used as a lawn and garden insecticide up until 1978, so there is a possibility that it could be in other areas besides under slabs. Prior sampling confirms that pesticides/herbicides are present in soils at various locations within MCBH housing areas. The presence of the pesticide residues in the soil is the result of past application of the chemicals on site rather than the result of a spill or other type of release.
	Class I Property (land)	Yes	
Polychlorinated Biphenyls (PCBs)	Class II Property (improvements) (634 housing units)	Yes	Due to the age of the development, housing units could have polychlorinated biphenyl (PCB)-containing fluorescent light ballasts. This material requires proper handling and disposal during demolition and renovations. A total of 55 pole mounted electrical transformers are located within the Mololani neighborhood. MCBH facility records indicate that all but one transformer (C-29) were installed after 1979. Currently, all transformers at MCBH do not contain PCBs. In January 2005, soil samples were collected from the area around the base of the transformer C-29 for PCB analyses. No PCBs were detected in any of the samples collected.
	Class I Property (land)	No	
Potable Water	Class II Property (improvements) (634 housing units)	No	Potable water is supplied to the subject site via the City and County of Honolulu Board of Water Supply and no production, monitoring, or UIC wells are reported at MCBH Kaneohe Bay.
	Class I Property (land)	No	

**Table 3-1.
On-Site Findings
Mololani Neighborhood, MCBH Kaneohe Bay**

Environmental Condition	Class	Finding of Concern (ECP)	Description
Radioactive Material	Class II Property (improvements) (634 housing units)	No	No radioactive material sites were identified within the neighborhood.
	Class I Property (land)	No	
Radon	Class II Property (improvements) (634 housing units)	Yes	Recent radon screening of the Mololani neighborhood indicated radon levels below EPA's action level of 4 picocuries per liter (pCi/L). No further testing is required for the remaining lifetime of these units. If these units are replaced in the future, radon screening would be required.
	Class I Property (land)	No	
Wastewater / Stormwater	Class II Property (improvements) (634 housing units)	WW - No SW - Yes	The housing units are connected to the sewer collection system that connects to the MCBH Kaneohe Bay Wastewater Reclamation Facility. No wastewater discharges of concern have been identified within the neighborhood.
	Class I Property (land)	No	The Mololani housing units: 1766, 2028, 2030, 2070, 2076, 2163, 2178, 2180 and 2212 have been impacted by heavy rains in the past.
Other Environmental Concerns	Class II Property (improvements) (634 housing units)	No	The northern portion of the neighborhood is located within a cultural resource site, the Mokapu Burial Area. The Mokapu Burial Area consists of the dunes along North Beach and the site is listed in the National Register of Historic Places. This site was the location of a traditional Hawaiian burial ground from which close to 1,600 human burials have been recovered.
	Class I Property (land)	Yes	Any landscaping or plant species alterations in all privatized housing areas must be reviewed and approved by MCBH Environmental Department. Erosion control measures need to be addressed prior to any ground disturbance and the final NPDES permit must be submitted to the MCBH Environmental Department.

Notes: NA – Not Applicable
ECP – Environmental Condition of Property



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4. LAND USE, FINDINGS, AND CONCLUSIONS FOR THE PA HONUA 3 NEIGHBORHOOD

4.1. HISTORICAL LAND USE

The historical land use for the entire MCBH Kaneohe Bay is provided in the background information in Appendix A. This section presents the specific land use history for the Pa Honua 3 neighborhood. The information regarding past and current uses of the neighborhood was obtained from a review of historical sources, such as aerial photographs, DoN records, and previous investigations on and around the neighborhood. Aerial photographs were reviewed at RMTC. Aerial photographs of the neighborhoods were dated 1953, 1968, 1969, 1990, 1991, 1992, and 1998 (RMTC). No aerial photographs were available before 1953 and after 1998.

The Pa Honua neighborhood consists of four distinct housing areas identified as FY 63 South, FY 64, FY 65, and FY 97. The Subject Property for this ECP includes only the 212 housing units in the FY 63 South, and FY 64 housing areas hereafter referred to as Pa Honua 3 (Figure 4-1). MCBH Kaneohe Bay housing records indicate the Pa Honua 3 housing area was originally constructed in 1965. The homes and concrete pads were subsequently demolished in 2004. New housing units were constructed and the housing area was accepted for occupancy in 2007. The earliest available aerial photograph from 1953 shows the Pa Honua neighborhood area as mostly undeveloped and vegetated. Mokapu Road is present to the south of the neighborhood and one road running parallel to Mokapu Road transects the neighborhood. A few small structures are located along this road. Three structures are visible near the present location of Building 6435. The next available aerial photograph from 1968 shows the entire Pa Honua neighborhood as originally developed. The layout of the roadways and buildings in the housing areas are similar to the present configuration. No changes were noted in the 1969, 1990, 1991, or the 1992 aerial photographs. In the 1998 aerial photograph the area in and around Ribillia Court is undergoing reconstruction.

4.2. CURRENT LAND USE

The Pa Honua 3 housing area currently serves as residential housing for Junior Enlisted (Figure 4-1).

MCBH Kaneohe Bay housing records indicate that the Pa Honua 3 neighborhood consists of 106 duplex buildings totaling 212 homes. The structures are two-story housing units with attached garages on the ground floor. The buildings are constructed using a combination of wood, drywall, and steel framing built upon slab on grade foundation. The walls are of drainable Exterior Insulation and Finish System (EIFS) over plywood sheathing resembling a stucco finish. Built up style roofing consisting of steel rafters overlayed with plywood sheathing and capped with cement roofing shingles.

The Pa Honua 3 neighborhood is bordered by Pennsylvania Avenue to the northeast. To the north is Mololani neighborhood. Pa Honua 1 and 2 are adjacent to the east and southeast boundaries, respectively. Bordering the neighborhood to the south is Mokapu Road and an area containing several motor pools.

4.3. DATABASE SEARCH RESULTS

Regulatory databases were searched for indications of environmental concerns that may affect the Subject Property. The databases were searched by EDR; their report is contained in Appendix C and findings for the Pa Honua 3 neighborhood are summarized in Table 4-1 (at the end of this section).

4.4. FINDINGS OF CONCERN

4.4.1. On-Site Findings Requiring Notification

The on-site findings of concern that require notification for the Pa Honua 3 neighborhood include the following potential environmental conditions:

ACM – No ACM survey has been completed in the Pa Honua 3 neighborhood. Due to its recent date of construction (2007), it is not likely that ACM is present within the buildings. However, the potential exists for transite piping to be in the neighborhood. This is a finding of concern for the Class I Property (land).

Since ACM hazards are not regulated under CERCLA, no ECP category is assigned to ACM hazards; however, they are addressed in this ECP for disclosure purposes.

Lead in Soil - Based on historical research, the former housing units may have contained LBP; therefore, the Lead in Soil is a potential concern.

Pesticides/Herbicides – Pesticides/herbicides have been legally applied to control various pests and plants. The housing units were constructed in 2007, well after the ban on the use of chlordane; therefore, we assume that chlordane is not a concern for the Class II (improvements). However, chlordane was also used as a lawn and garden insecticide up until 1978, so there is a possibility that it could be in other areas. Prior sampling confirms that pesticides/herbicides are present in soils at various locations within MCBH housing areas (Kauai Environmental 2005, 2006 and White Environmental 2005). The presence of the pesticide residues in the soil is the result of past application of the chemicals on site rather than the result of a spill or other type of release (DoN 2006b). This finding is an area of concern for the Class I Property (land).

Radon – Radon screening of the Pa Honua 3 neighborhood has not been performed but is recommended (ORNL 2007). Therefore, this finding is an area of concern for the Class II Property (improvements).

Other Environmental Concerns – Any landscaping or plant species alterations in all privatized housing areas must be reviewed and approved by MCBH Environmental Department for adherence to requirements in the MCBH INRMP/EA (2001) as updated in the MCBH INRMP (2006), Appendix D and component Master Landscaping guidelines published in 2002 as part of the government-driven MCBH INRMP implementation process. Prior to any ground disturbance, proposed action must be reviewed by the MCBH Environmental Department (DoN 2006b, USMC 2006). This finding is an area of concern pertaining to Class I (land).

Erosion control measures need to be addressed prior to any ground disturbance and the final NPDES permit must be submitted to the MCBH Environmental Department (DoN 2006b). This finding is an area of concern pertaining to Class I (land).

The ECP categories for these environmental conditions requiring notification along with detailed descriptions of the findings are presented in Table 4-1 (at the end of this section). The locations of the various sites identified are shown on Figure 4-1 (at the end of this section).

4.4.2. Off-Site Findings Requiring Notification

Three off-site findings of concern requiring notification were identified for the Pa Honua 3 neighborhood. IR Site 2 (Quarry Pit Landfill) is located southwest of the neighborhood. A 1989 Site Inspection was completed (DoN 1989). The site was assigned an IR Program ranking of Category 5 (e.g., areas where release, disposal, and/or migration of hazardous substances has occurred, and removal or remedial actions are underway, but all required remediation actions have not yet been taken). This finding is an area of concern for Class I Property (land).

Two wetlands (Motor Pool Wetlands and the Nu'upia Ponds Wetlands Area) are downstream of drainage from the Pa Honua area and are also frequented by endangered and protected species (DoN 2006b). This is a finding of concern for the Subject Property as coordination with personnel from MECPD will be necessary when working at the neighborhood. A more detailed discussion on the natural and cultural resources at MCBH Kaneohe Bay is provided in Appendix A.

4.5. FINDINGS OF NO CONCERN

4.5.1. On-Site Findings Not Requiring Notification

The on-site findings that do not require notification for the Pa Honua 3 neighborhood include the following potential environmental conditions:

Air – No air issues were identified within the neighborhood.

AUP – No AUP sites were identified within the neighborhood.

HS/HM/HW – Due to its recent date of construction (2007), it is not likely that the housing units have mercury and lead-containing fluorescent light tubes, mercury-containing switches, and ODS-containing appliances (DoN 2006b).

Landfills – No landfill sites were identified within the neighborhood.

LBP – Based on historical research, the housing units were constructed in 2007, well after the ban on the use of LBP; therefore, we assume that LBP is not a concern.

MW/BW – No MW/BW sites were identified within the neighborhood.

Mixed Waste – No mixed waste sites were identified within the neighborhood.

Operationally Contaminated/IR Sites – No operationally contaminated or IR sites were identified within the neighborhood.

Ordnance/UXO – No ordnance/UXO sites were identified within the neighborhood.

PCBs – Twenty-six (26) pad mounted electrical transformers are located within the Pa Honua 3 neighborhood where construction was recently completed. MCBH facility records indicate that the transformers (T1-1 to T1-9, T2-1 to T2-9, and T3-1 to T3-8) were installed in 2004 (DoN 2005). Based on their age (i.e. installed after the 1979 ban on manufacturing), the transformers should not contain PCBs.

According to Metcalf Construction light fixtures consist of standard single bulb fixtures (i.e., there are no fluorescent light ballasts within the neighborhood that could contain PCBs) (personal communication, (b) (6) 2007).

Potable Water – Potable water is supplied to the subject site via the City and County of Honolulu Board of Water Supply and no production, monitoring, or UIC wells are reported at MCBH Kaneohe Bay (DoN 2005; EDR 2006).

Radioactive Material – No radioactive material sites were identified within the neighborhood.

Wastewater and Stormwater – The housing units are connected to the sewer collection system that connects to the MCBH Kaneohe Wastewater Reclamation Facility. No wastewater or stormwater discharges of concern have been identified within the neighborhood (personal communication, (b) (6) 2007).

The ECP categories for these environmental conditions not requiring notification along with detailed descriptions of the findings are presented in Table 4-1 (at the end of this section).

4.5.2. Off-Site Findings of No Concern

Besides IR Site 2 and the two wetlands (Motor Pool Wetlands and the Nu'upia Ponds Wetlands Area), there are no environmental concerns at adjacent properties that would likely impact the Pa Honua 3 neighborhood (EDR 2006). Five former USTs (KB 75, KB 76, KB 77, KB 78 and KB 79) were located on the adjacent property, west of the neighborhood. All five tanks have been removed and no further action is required at KB-79. Further remediation is required (USACE 1999a) at the gas station that contained USTs KB 75 through KB 78 (Category 2c). However, considering the distance between this site and the eastern portion of the neighborhood that comprises the Subject Property, it is unlikely that the contamination at the site will impact the neighborhood.

The area east and south of the neighborhood is located within the area designated in the MCBH ICRMP as medium and high archeological sensitivity zones. These zones have a medium and high level of potential for the presence of subsurface archeological deposits associated with the Nu'upia Ponds, which are located south of the housing area (MCBH 2006). However, considering the distance between these zones and the southern and eastern portions of the neighborhood that comprises the Subject Property, it is unlikely that this will impact the neighborhood.

The area east and south of the neighborhood is located within the area within FEMA Zone AE, where base flood elevations have been determined to be between 8 and 13 feet (DoN 2006a). Housing units with habitable floor heights (elevation of the bottom of the first floor) below the base flood elevation pose a potential risk to the safety of building occupants. However, considering the distance between this zone and the southern and eastern portions of the neighborhood that comprises the Subject Property, it is unlikely that this will impact the neighborhood.

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**Table 4-1.
On-Site Findings
Pa Honua 3 Neighborhood, MCBH Kaneohe Bay**

Environmental Condition	Class	Finding of Concern (ECP)	Description
Air	Class II Property (improvements) (212 housing units)	No	No air issues were identified within the neighborhood.
	Class I Property (land)	No	
Asbestos-Containing Materials	Class II Property (improvements) (212 housing units)	No	No ACM survey has been completed in the Pa Honua 3 neighborhood. Due to its recent date of reconstruction (2007), it is not likely that ACM is present within the buildings. However the potential exists for transite piping to be in the neighborhood.
	Class I Property (land)	Yes	
ASTs, USTs and Petroleum Products (AUP)	Class II Property (improvements) (212 housing units)	(Category 1)	No AUP sites were identified within the neighborhood.
	Class I Property (land)	(Category 1)	
Hazardous Substances / Hazardous Materials / Hazardous Wastes	Class II Property (improvements) (212 housing units)	No	Due to its recent date of reconstruction (2007), it is not likely the housing units have mercury and lead-containing fluorescent light tubes, mercury-containing switches and ODS-containing appliances.
	Class I Property (land)	No	

Table 4-1.
On-Site Findings
Pa Honua 3 Neighborhood, MCBH Kaneohe Bay

Environmental Condition	Class	Finding of Concern (ECP)	Description
Landfills	Class II Property (improvements) (212 housing units)	No	No landfill sites were identified within the neighborhood.
	Class I Property (land)	No	
Lead-Based Paint	Class II Property (improvements) (212 housing units)	No	Based on historical research, the housing units were constructed in 2007, well after the ban on the use of LBP; therefore, we assume that LBP is not a concern.
	Class I Property (land)	NA	
Lead in Soil	Class II Property (improvements) (212 housing units)	NA	Based on historical research, the former housing units may have contained LBP; therefore, the Lead in Soil is a potential concern.
	Class I Property (land)	Yes	
Medical Waste/ Biohazard Waste	Class II Property (improvements) (212 housing units)	No	No medical waste / biohazard waste sites were identified within the neighborhood.
	Class I Property (land)	No	
Mixed Waste	Class II Property (improvements) (212 housing units)	No	No mixed waste sites were identified within the neighborhood.
	Class I Property (land)	No	

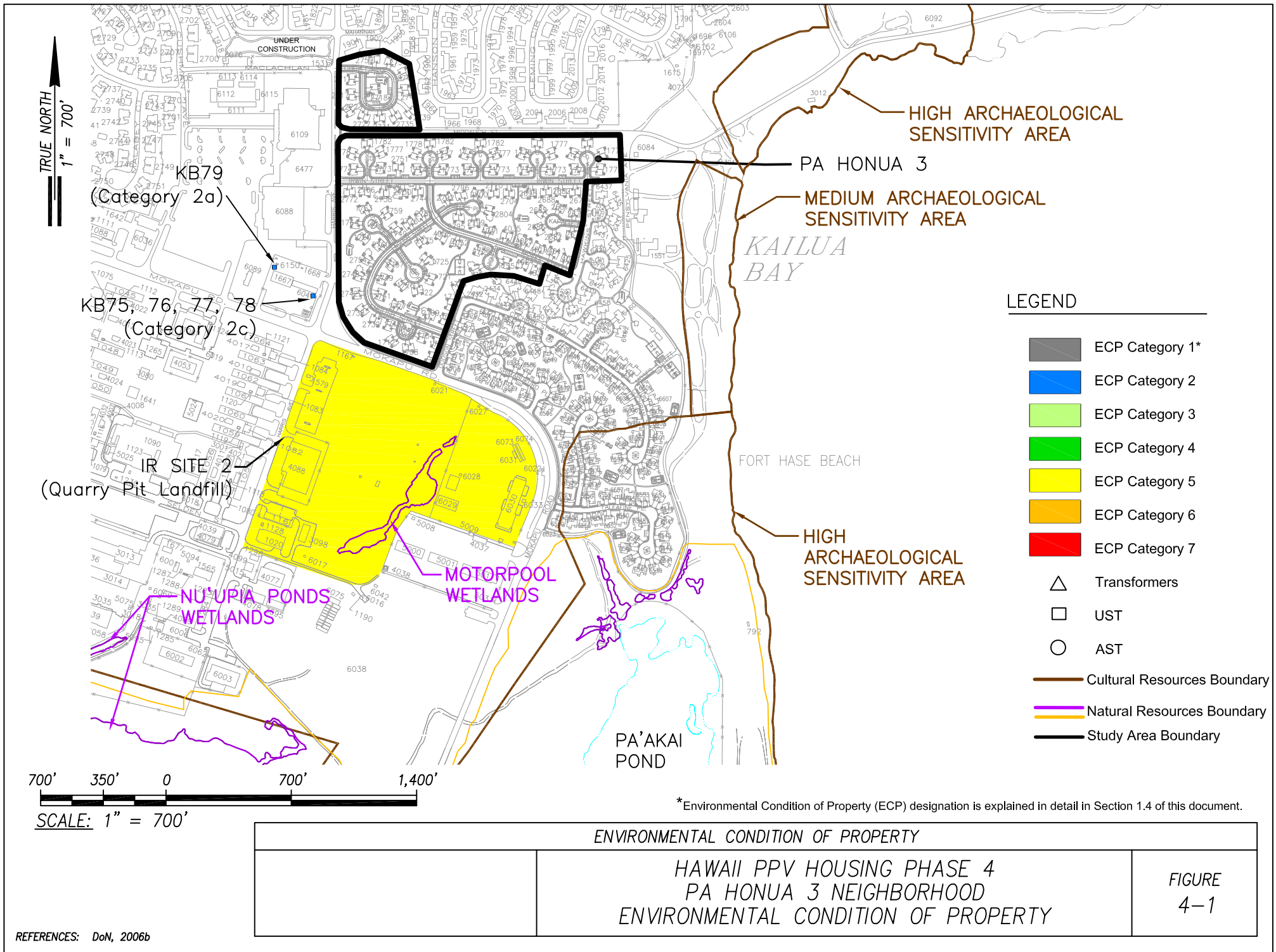
Table 4-1.
On-Site Findings
Pa Honua 3 Neighborhood, MCBH Kaneohe Bay

Environmental Condition	Class	Finding of Concern (ECP)	Description
Operationally Contaminated / Installation Restoration Sites	Class II Property (improvements) (212 housing units)	(Category 1)	No Operationally Contaminated / Installation Restoration sites were identified within the neighborhood.
	Class I Property (land)	(Category 1)	
Ordnance / Unexploded Ordnance	Class II Property (improvements) (212 housing units)	No	No ordnance / unexploded ordnance sites were identified within the neighborhood.
	Class I Property (land)	No	
Pesticides / Herbicides	Class II Property (improvements) (212 housing units)	No	Pesticides/herbicides have been legally applied to control various pests and plants. The housing units were constructed in 2007, well after the ban on the use of chlordane; therefore, we assume that chlordane is not a concern for the Class II (improvements). However, chlordane was also used as a lawn and garden insecticide up until 1978, so there is a possibility that it could be in other areas besides under slabs. Prior sampling confirms that pesticides/herbicides are present in soils at various locations within MCBH housing areas. The presence of the pesticide residues in the soil is the result of past application of the chemicals on site rather than the result of a spill or other type of release.
	Class I Property (land)	Yes	
Polychlorinated Biphenyls (PCBs)	Class II Property (improvements) (212 housing units)	No	According to the construction history, fluorescent light ballasts within the neighborhood should not contain PCBs.
	Class I Property (land)	No	Twenty-six (26) pad mounted electrical transformers are located within the neighborhood. The transformers were installed when the housing area was constructed in 2007. Based on their age (i.e. installed after the 1979 ban on manufacturing), the transformers should not contain PCBs.
	Class I Property - Transformer Sites: T1-1 to T1-9; T2-1 to T2-9; T3-1 to T3-8	(Category 1)	

Table 4-1.
On-Site Findings
Pa Honua 3 Neighborhood, MCBH Kaneohe Bay

Environmental Condition	Class	Finding of Concern (ECP)	Description
Potable Water	Class II Property (improvements) (212 housing units)	No	Potable water is supplied to the subject site via the City and County of Honolulu Board of Water Supply and no production, monitoring, or UIC wells are reported at MCBH Kaneohe Bay.
	Class I Property (land)	No	
Radioactive Material	Class II Property (improvements) (212 housing units)	No	No radioactive material sites were identified within the neighborhood.
	Class I Property (land)	No	
Radon	Class II Property (improvements) (212 housing units)	Yes	Radon screening of the newly constructed Pa Honua 3 neighborhood has not been performed but is recommended.
	Class I Property (land)	No	
Wastewater / Stormwater	Class II Property (improvements) (212 housing units)	No	The housing units are connected to the sewer collection system that connects to the MCBH Kaneohe Bay Wastewater Reclamation Facility. No wastewater or stormwater discharges of concern have been identified within the neighborhood.
	Class I Property (land)	No	
Other Environmental Concerns	Class II Property (improvements) (212 housing units)	No	Any landscaping or plant species alterations in all privatized housing areas must be reviewed and approved by MCBH Environmental Department.
	Class I Property (land)	Yes	Erosion control measures need to be addressed prior to any ground disturbance and the final NPDES permit must be submitted to the MCBH Environmental Department

Notes: NA – Not Applicable
ECP – Environmental Condition of Property



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5. LAND USE, FINDINGS, AND CONCLUSIONS FOR THE ULUPAU NEIGHBORHOOD

5.1. HISTORICAL LAND USE

The historical land use for the entire MCBH Kaneohe Bay is provided in the background information in Appendix A. This section presents the specific land use history for the Ulupau neighborhood. The information regarding past and current uses of the neighborhood was obtained from a review of historical sources, such as aerial photographs, DoN records, and previous investigations on and around the neighborhood. Aerial photographs were reviewed at RMTC. Aerial photographs of the neighborhood were dated 1953, 1968, 1969, 1990, 1991, 1992, 1998 and 1999 (RMTC). No aerial photographs were available before 1953 and after 1999.

MCBH Kaneohe Bay housing records indicate that the Ulupau neighborhood was built in 1976. The earliest available aerial photograph from 1953 shows the neighborhood area as vegetated and undeveloped. The aerial photographs from 1968 and 1969 show the development of the Mololani neighborhood adjacent to the west. The Ulupau neighborhood remains undeveloped. The next available aerial photographs from the 1990, 1991, 1992, 1998 and 1999 show the neighborhood developed and configured as present.

5.2. CURRENT LAND USE

This ECP covers all but the most northern portion of the Ulupau neighborhood that was covered in a previous Environmental Baseline Survey (EBS) (DoN 2006b). The Subject Property consists of 65 two-story buildings (296 homes) with 103 detached carports (Figure 5-1). The neighborhood currently serves as residential housing for Noncommissioned Officers and Staff Noncommissioned Officers.

MCBH Kaneohe Bay housing records indicate that the units were constructed in 1976 and are configured as duplex, four-plex and eight-plex housing units with shared walls on either side with the exception of end units. The housing units are constructed using a combination of CMU and wood single wall paneling, built upon a concrete slab-on-grade foundation. The roof consists of wood framing and a composite asphalt shingle cap layer. Drywall or gypsum paneling is used for the interior walls. The interior floor coverings are 12-inch by 12-inch vinyl floor tiles throughout, with throw rugs or non-fixed carpeting installed by the current occupants. The carports are constructed of wood sheet paneling and rafters, with CMU vertical columns. The carports roofs consist of an asphalt shingle overlayment.

The Nani Ulupau neighborhood is adjacent and to the north. The Mololani neighborhood is adjacent and to the west. The Ulupau Crater is to the east across Daly Road that defines the eastern boundary of the Ulupau neighborhood. Fort Hase Beach and Middaugh Street are south of the undeveloped grassy field that abuts the neighborhood's southern border. The southwest corner of this area is currently used as a construction laydown area, and the remaining areas are undeveloped and are sometimes used for base training exercises.

5.3. DATABASE SEARCH RESULTS

Regulatory databases were searched for indications of environmental concerns that may affect the Subject Property. The databases were searched by EDR; their report is

contained in Appendix C and findings for the Ulupau neighborhood are summarized in Table 5-1 (at the end of this section).

5.4. FINDINGS OF CONCERN

5.4.1. On-Site Findings Requiring Notification

The on-site findings of concern that require notification for the Ulupau neighborhood include the following potential environmental conditions:

ACM – ACM sampling was conducted in 54 housing units for preparation of an Asbestos Management Plan in 1997 (DoN 1997b). Previous asbestos surveys of the neighborhood have identified the following ACM in the housing units: floor tiles and mastic and roof shingles and roof felt (DoN 1997b). ACM was stated to be level 5, a low potential hazard to occupants and workers due to its being non-friable or of low friability. The response action recommended for these ACM was O&M.

Other ACM may also be present in the housing units and may include roofing materials, asbestos concrete pipes, transite in housing walls, sink undercoating, mastic for rubber base boards, drywall joint compound, ceiling acoustical tiling, and asbestos coated pipes in concrete foundations (personal communication, (b) (6) 2006 and (b) (6) 2006). ACM may also be present in underground transite piping. This finding is an area of concern pertaining to the Class I Property (land) and Class II Property (improvements).

Since ACM hazards are not regulated under CERCLA, no ECP category is assigned to ACM hazards; however, they are addressed in this ECP for disclosure purposes.

HS/HM/HW – Housing units could have mercury and lead-containing fluorescent light tubes, mercury-containing switches, and ODS-containing appliances (DoN 2006b). These materials require proper handling and disposal during demolition and renovations. These findings are an area of concern pertaining to the Class II Property (improvements).

LBP – Twenty-eight (28) of the 296 housing units within the central and south portion of the neighborhood were selected for LBP inspections in 2007. Based on the HUD Guidelines, none of the component types met the criteria for community-wide lead-based painted surfaces (DoN 2007b). However, there were isolated instances of LBP in six component types, closet shelf (wood), door casing, exterior door (wood), exterior door casing (wood), exterior upper wall (wood), and carport ceiling (wood). This finding is an area of concern for the Class II Property (improvements).

Twenty-one (21) housing units were selected for lead risk assessments and all of the surfaces were considered intact. Dust wipe samples collected from the floors and window troughs of the 21 housing units selected for lead risk assessments concluded that a community-wide dust lead hazard does not exist on the bare floors or window troughs.

Lead in Soil - No soil samples were collected from the perimeter of the Ulupau housing units (DoN 2007b). The areas surrounding the building structures were landscaped and utilized a combination of wood chips, sod and gravel in planters and

other areas with the potential for exposure to bare soil. The playgrounds within the neighborhood were of new construction with synthetic ground covering. No “community-wide” lead in soil issues based on Lead Risk Assessment; however, there may be isolated incidences of lead in soil throughout neighborhood due lead-based paint being historically used at the site. This is a finding of concern for the Class I Property (land).

Pesticides/Herbicides – According to housing management, pesticides/herbicides have been legally applied to the interior and exterior of the homes at MCBH Kaneohe Bay to control various pests and plants. There is a very strong possibility that chlordane was applied beneath housing floor slabs in the past for termite protection. Additionally, chlordane was used as a lawn and garden insecticide up until 1978, so there is a possibility that it could be in other areas besides under slabs. Prior sampling confirms that pesticides/herbicides are present in soils at various locations within MCBH housing areas (Kauai Environmental 2005, 2006 and White Environmental 2005). The presence of the pesticide residues in the soil is the result of past application of the chemicals on site rather than the result of a spill or other type of release (DoN 2006b). This finding is an area of concern for the Class I Property (land) and Class II Property (improvements).

PCBs – Due to the age of the development, housing units could have PCB-containing fluorescent light ballasts. This material requires proper handling and disposal during demolition and renovations. This finding is an area of concern pertaining to the Class II Property (improvements).

Radon – Recent radon screening of the Ulupau neighborhood indicated radon levels below EPA’s action level of 4 pCi/L. No further testing is required for the remaining lifetime of these units. If these units are replaced in the future, radon screening would be required (ORNL 2007).

Other Environmental Concerns – Any landscaping or plant species alterations in all privatized housing areas must be reviewed and approved by MCBH Environmental Department for adherence to requirements in the MCBH INRMP/EA (2001) as updated in the MCBH INRMP (2006), Appendix D and component Master Landscaping guidelines published in 2002 as part of the government-driven MCBH INRMP implementation process. Prior to any ground disturbance, proposed action must be reviewed by the MCBH Environmental Department (DoN 2006b, USMC 2006). This finding is an area of concern pertaining to Class I (land).

Erosion control measures need to be addressed prior to any ground disturbance and the final NPDES permit must be submitted to the MCBH Environmental Department (DoN 2006b). This finding is an area of concern pertaining to Class I (land).

The ECP categories for these environmental conditions requiring notification along with detailed descriptions of the findings are presented in Table 5-1 (at the end of this section). The locations of the various sites identified are shown on Figure 5-1 (at the end of this section).

5.4.2. Off-Site Findings Requiring Notification

The area adjacent to the southeastern edge of the neighborhood is located within the area designated in the MCBH ICRMP as a high archeological sensitivity zone. This zone has a high level of potential for the presence of subsurface archeological deposits (MCBH 2006). Human remains have been encountered during previous construction at the adjacent Nani Ulupau neighborhood (DoN 2006b). Prior to any ground disturbance, proposed action must be reviewed by the MCBH Environmental Department (DoN 2005).

5.5. FINDINGS OF NO CONCERN

5.5.1. On-Site Findings Not Requiring Notification

The on-site findings that do not require notification for the Ulupau neighborhood include the following potential environmental conditions:

Air – No air issues were identified within the neighborhood.

AUP – No AUP sites were identified within the neighborhood.

Landfills – No landfill sites were identified within the neighborhood.

MW/BW – No MW/BW sites were identified within the neighborhood.

Mixed Waste – No mixed waste sites were identified within the neighborhood.

Operationally Contaminated/IR Sites – No operationally contaminated or IR sites were identified within the neighborhood.

Ordnance/UXO – No ordnance/UXO sites were identified within the neighborhood.

PCBs – A total of 42 pad mounted electrical transformers (T-1 thru T-42) are located within the Ulupau neighborhood. Thirty-six (T-1 thru T-34, T-38, T-39) of the 42 transformers are associated with the portion of the neighborhood covered under this ECP. MCBH facility records indicate that all but three transformers (T-6, T-7, and T-12) were installed after 1979 (DoN 2005). Transformers T-6, T-7, and T-12 were installed in 1975 and could have contained PCBs in the past. In January 2005 soil and wipe samples were collected from the area around the base of each of the three transformers for PCB analyses. No PCBs were detected in any of the samples collected (DoN 2005). The remaining 33 transformers were installed after the 1979 ban on PCB manufacturing and should not contain PCBs.

Potable Water – Potable water is supplied to the subject site via the City and County of Honolulu Board of Water Supply and no production, monitoring, or UIC wells are reported at MCBH Kaneohe Bay (DoN 2005; EDR 2006).

Radioactive Material – No radioactive material sites were identified within the neighborhood.

Wastewater and Stormwater – The housing units are connected to the sewer collection system that connects to the MCBH Kaneohe Wastewater Reclamation Facility. No wastewater or stormwater discharges of concern have been identified within the neighborhood (personal communication, (b) (6) 2007).

The ECP categories for these environmental conditions not requiring notification along with detailed descriptions of the findings are presented in Table 5-1 (at the end of this section).

5.5.2. Off-Site Findings of No Concern

Besides the high archeological sensitivity zone to the south, there are no environmental concerns at adjacent properties that would likely impact the Ulupau neighborhood (EDR 2006). The Ulupau Sanitary Landfill borders the southern portion of the neighborhood. This landfill site has been classified as Category 1, and it is not likely to impact the Subject Property (DoN 2005). One former UST, KB 82, was located within 1,000 feet southwest of the neighborhood. All USTs have been removed and no further action at this site is required (USACE 1999b). This UST site is not likely to impact the subject neighborhood.

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**Table 5-1.
On-Site Findings
Ulupau Neighborhood, MCBH Kaneohe Bay**

Environmental Condition	Class	Finding of Concern (ECP)	Description
Air	Class II Property (improvements) (296 housing units, 103 detached carports)	No	No air issues were identified within the neighborhood.
	Class I Property (land)	No	
Asbestos-Containing Materials	Class II Property (improvements) (296 housing units, 103 detached carports)	Yes	Previous asbestos surveys of the neighborhood have identified the following ACM in the housing units: floor tiles and mastic and roof shingles and roof felt. ACM was stated to be level 5, a low potential hazard to occupants and workers due to its being non-friable or of low friability. The response action recommended for these ACM was O&M. Other ACM may also be present in the housing units and may include roofing materials, asbestos concrete pipes, transite in housing walls, sink undercoating, mastic for rubber base boards, drywall joint compound, ceiling acoustical tiling, and asbestos coated pipes in concrete foundations. The potential exists for transite pipes to be in the neighborhood.
	Class I Property (land)	Yes	
ASTs, USTs and Petroleum Products (AUP)	Class II Property (improvements) (296 housing units, 103 detached carports)	(Category 1)	No AUP sites were identified within the neighborhood.
	Class I Property (land)	(Category 1)	
Hazardous Substances / Hazardous Materials / Hazardous Wastes	Class II Property (improvements) (296 housing units, 103 detached carports)	Yes	Due to the age of the development, housing units could have mercury and lead-containing fluorescent light tubes, mercury-containing switches, and ODS-containing appliances. All these materials require proper handling and disposal during demolition and renovations.
	Class I Property (land)	(Category 1)	
Landfills	Class II Property (improvements) (296 housing units, 103 detached carports)	No	No landfill sites were identified within the neighborhood.
	Class I Property (land)	No	

**Table 5-1.
On-Site Findings
Ulupau Neighborhood, MCBH Kaneohe Bay**

Environmental Condition	Class	Finding of Concern (ECP)	Description
Lead-Based Paint	Class II Property (improvements) (296 housing units, 103 detached carports)	Yes	Twenty-eight (28) of the 296 housing units within the central and south portion of the neighborhood were selected for LBP inspections in 2007. Based on the HUD Guidelines, none of the component types met the criteria for community-wide lead-based painted surfaces (DoN 2007b). However, there were isolated instances of LBP in six component types, closet shelf (wood), door casing, exterior door (wood), exterior door casing (wood), exterior upper wall (wood), and carport ceiling (wood). Twenty-one (21) housing units were selected for lead risk assessments and all of the surfaces were considered intact. Dust wipe samples collected from the floors and window troughs of the 21 housing units selected for lead risk assessments concluded that a community-wide dust lead hazard does not exist on the bare floors or window troughs.
	Class I Property (land)	NA	
Lead in Soil	Class II Property (improvements) (296 housing units, 103 detached carports)	NA	No soil samples were collected from the perimeter of the housing units. The areas surrounding the building structures were landscaped and utilized a combination of wood chips, sod and gravel in planters and other areas with the potential for exposure to bare soil. The playgrounds within the neighborhood were of new construction with synthetic ground covering. No "community-wide" lead in soil issues based on Lead Risk Assessment; however, there may be isolated incidences of lead in soil throughout neighborhood.
	Class I Property (land)	Yes	
Medical Waste/ Biohazard Waste	Class II Property (improvements) (296 housing units, 103 detached carports)	No	No medical waste/ biohazard waste sites were identified within the neighborhood.
	Class I Property (land)	No	
Mixed Waste	Class II Property (improvements) (296 housing units, 103 detached carports)	No	No mixed waste sites were identified within the neighborhood.
	Class I Property (land)	No	
Operationally Contaminated / Installation Restoration Sites	Class II Property (improvements) (296 housing units, 103 detached carports)	(Category 1)	No Operationally Contaminated / Installation Restoration sites were identified within the neighborhood.
	Class I Property (land)	(Category 1)	

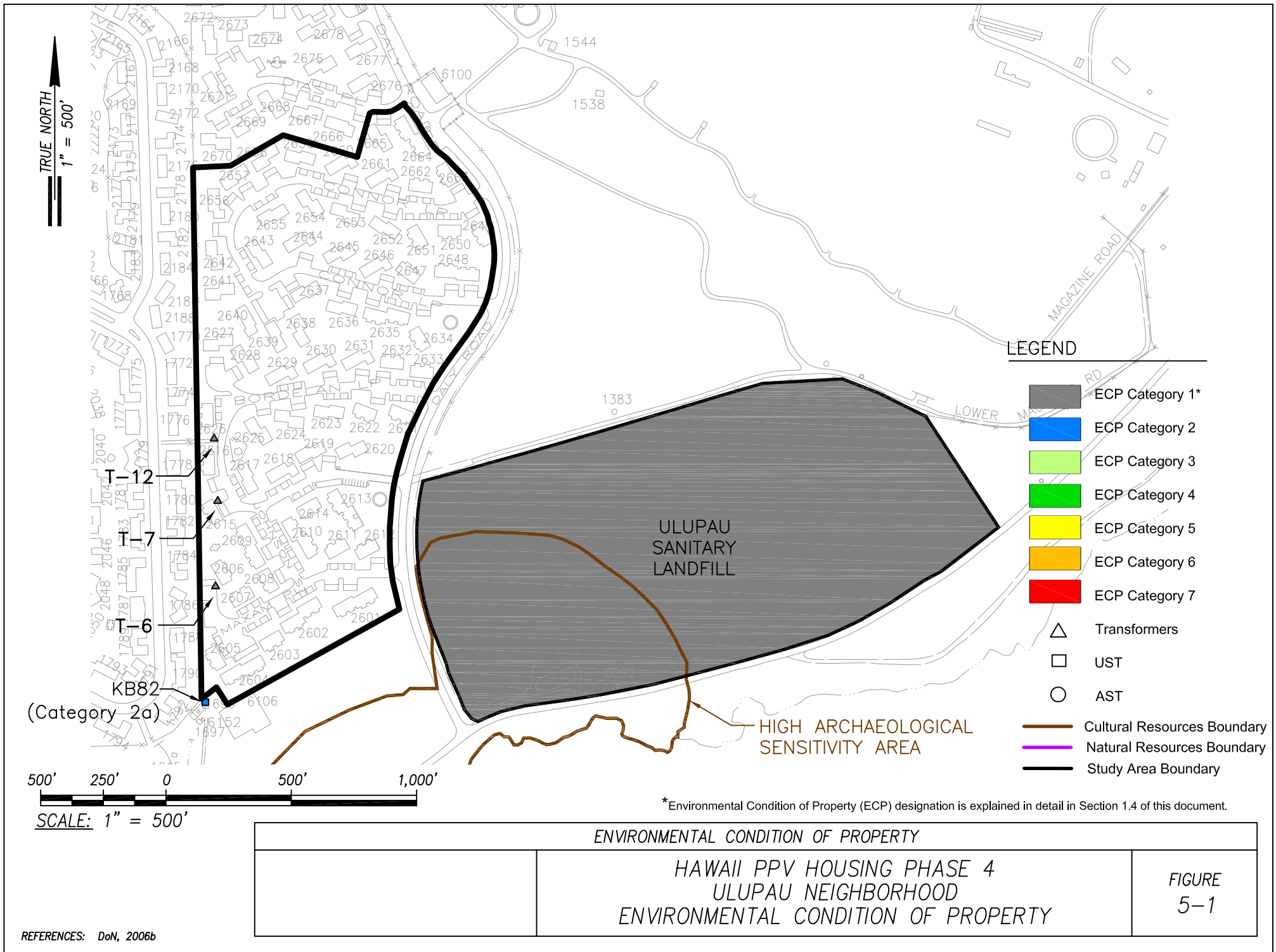
**Table 5-1.
On-Site Findings
Ulupau Neighborhood, MCBH Kaneohe Bay**

Environmental Condition	Class	Finding of Concern (ECP)	Description
Ordnance / Unexploded Ordnance	Class II Property (improvements) (296 housing units, 103 detached carports)	No	No ordnance/ unexploded ordnance sites were identified within the neighborhood.
	Class I Property (land)	No	
Pesticides / Herbicides	Class II Property (improvements) (296 housing units, 103 detached carports)	Yes	According to housing management, pesticides/herbicides have been legally applied to the interior and exterior of the homes at MCBH Kaneohe Bay to control various pests and plants. Chlordane was also likely applied beneath the floor slabs of the housing units for termite protection. Additionally, chlordane was used as a lawn and garden insecticide up until 1978, so there is a possibility that it could be in other areas besides under slabs. Prior sampling confirms that pesticides/herbicides are present in soils at various locations within MCBH housing areas. The presence of the pesticide residues in the soil is the result of past application of the chemicals on site rather than the result of a spill or other type of release.
	Class I Property (land)	Yes	
Polychlorinated Biphenyls (PCBs)	Class II Property (improvements) (296 housing units, 103 detached carports)	Yes	Fluorescent light ballasts that contain PCBs may be present within the housing units. PCB-containing light ballasts require proper handling and disposal during demolition and renovations, and they are addressed in this ECP for disclosure purposes. Thirty-six pad mounted electrical transformers are located within the neighborhood. MCBH facility records indicate that all but three transformers (T-6, T-7, and T-12) were installed after 1979. Transformers T-6, T-7, and T-12 were installed in 1975 and could have contained PCBs in the past. In January 2005 soil and wipe samples were collected from the area around the base of each of the three transformers for PCB analyses. No PCBs were detected in any of the samples collected. The remaining 33 transformers were installed after the 1979 ban on PCB manufacturing and should not contain PCBs.
	Class I Property (land)	No	
	Class I Property (Transformer Sites: T1 to T34, T38, T39)	(Category 1)	
Potable Water	Class II Property (improvements) (296 housing units, 103 detached carports)	No	Potable water is supplied to the subject site via the City and County of Honolulu Board of Water Supply and no production, monitoring, or UIC wells are reported at MCBH Kaneohe.
	Class I Property (land)	No	

**Table 5-1.
On-Site Findings
Ulupau Neighborhood, MCBH Kaneohe Bay**

Environmental Condition	Class	Finding of Concern (ECP)	Description
Radioactive Material	Class II Property (improvements) (296 housing units, 103 detached carports)	No	No radioactive material sites were identified within the neighborhood.
	Class I Property (land)	No	
Radon	Class II Property (improvements) (296 housing units, 103 detached carports)	Yes	Recent radon screening of the Ulupau neighborhood indicated radon levels below 4 pCi/L. No further radon testing is required for the remaining lifetime of these units. If these units are replaced in the future, radon screening would be required.
	Class I Property (land)	No	
Wastewater / Stormwater	Class II Property (improvements) (296 housing units, 103 detached carports)	No	The housing units are connected to the sewer collection system that connects to the MCBH Kaneohe Wastewater Reclamation Facility. No wastewater or stormwater discharges of concern have been identified within the neighborhood.
	Class I Property (land)	No	
Other Environmental Concerns	Class II Property (improvements) (296 housing units, 103 detached carports)	No	Any landscaping or plant species alterations in all privatized housing areas must be reviewed and approved by MCBH Environmental Department.
	Class I Property (land)	Yes	Erosion control measures need to be addressed prior to any ground disturbance and the final NPDES permit must be submitted to the MCBH Environmental Department

Notes: NA – Not Applicable
ECP – Environmental Condition of Property



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6. PROPERTY CATEGORY DESIGNATION

This ECP report documents the investigation's findings and provides an assessment of the environmental condition of the Subject Property. Based on the research findings and site reconnaissance, the Subject Property is classified according to the property categories specified in Section 331 of the Fiscal Year National Defense Authorization Act, which revised the definition of "uncontaminated" for Base Realignment and Closure (BRAC) Installations (DoD 1997).

6.1. CLASS I PROPERTY (LAND)

The Class I Property (the land) is classified as generally belonging to Category 1 (areas where no release or disposal of hazardous substances or petroleum products has occurred including no migration of these substances from adjacent areas).

There are two IR sites located adjacent to the Subject Property with hazardous waste concerns where removal/remedial actions are underway or have been initiated but are not yet complete (Category 5). Additionally, there are several findings of concern that require notifications for the Class I Property (land) that are summarized below.

Asbestos-Containing Material (ACM). ACM may also be present in underground transite piping. This finding is an area of concern pertaining to the Class I Property (land).

Lead in Soil. Based on historical research, the former housing units in Pa Honua 3 housing area may have contained LBP; therefore, the lead in soil is a potential concern. Lead Risk Assessments were recently performed for the Mololani and Ulupau neighborhoods and a "community-wide" lead in soil hazard was not found. However, isolated instances of lead in soil may occur because of the presence of lead-based paint on the housing units.

Pesticides/Herbicides. Pesticides/Herbicides may be present in the soil in all neighborhoods as a result of past legal pesticide applications and do not require remediation (Category 1); however, future construction that may disturb such soils may require environmental, as well as safety and health, controls. Pesticides/Herbicides have been identified in areas within the Pa Honua 3 neighborhood. This is a finding of concern for the Class I Property (land) in all neighborhoods.

Other Environmental Concerns - Cultural and Natural Resources. All neighborhoods have concerns regarding landscaping or plant species alterations. Any changes must be approved by the Government and adhere to the MCBH INRMP/EA (2001) as updated in the MCBH INRMP (2006), Appendix D and component Master Landscaping Guidelines published in 2002. Erosion control measures need to be addressed prior to any ground disturbance and the proposed action must be reviewed by the MCBH Environmental Department.

The northwestern portion of the Mololani neighborhood is assessed to be within the high archaeological sensitivity zone, known as the Mokapu Burial Area, in the MCBH ICRMP (DoN 2006). The Mokapu Burial Area is listed in the NRHP (MCBH 2006).

The area adjacent to the southern edge of Ulupau neighborhood is assessed to be within the high archaeological sensitivity zone in the MCBH ICRMP (DoN 2006a).

The two wetlands (Motor Pool Wetlands and the Nu'upia Ponds Wetlands Area) are downstream of drainage from the Pa Honua neighborhood and are also frequented by endangered and protected species. Coordination with personnel from MECPD will be necessary when working at the neighborhood.

6.2. CLASS II PROPERTY (IMPROVEMENTS)

The Class II Property (improvements) is classified, based on its environmental condition, as generally belonging to Category 1.

Additionally, there are several findings of concern that require notifications for the Class II Property (improvements) that are summarized below.

Asbestos-Containing Material (ACM). Previous asbestos surveys⁵ conducted within the Subject Property have identified ACM in the following neighborhoods: Mololani and Ulupau. In general, ACM may consists of the following: floor tiles and mastic; linoleum flooring and mastic; vinyl sheet flooring; base cove; sink undercoating; pipe insulation; duct insulation; pitch and gravel roofing; roofing shingles and roofing felt.

In addition, demolition of similar military housing on Oahu has identified other ACM that may not be readily accessible or visible during a routine ACM survey (i.e. non-demolition survey). ACM that may also be present in the housing units include: roofing materials, asbestos concrete pipes, transite in housing walls, and asbestos coated pipes in concrete foundations. This is a finding of concern for the Mololani and Ulupau housing areas.

Hazardous Substance/Hazardous Material/Hazardous Wastes. The housing units within the Mololani neighborhood contain canec ceiling panels that are known to contain arsenic. Lead and mercury-containing fluorescent lamps and switches and ozone-depleting substance-containing appliances may also be present within the Mololani and Ulupau neighborhoods. These building materials are not regulated under CERCLA and do not require an assigned ECP category. However, these building materials require special handling and disposal procedures during demolition or renovation activities, and have been listed for disclosure purposes.

Lead-Based Paint (LBP). The LBP survey of Mololani and the Ulupau neighborhoods were completed in 2007 in conjunction with this ECP. The results of the survey indicate LBP is present in the Mololani and Ulupau neighborhoods. An LBP Survey was not conducted for the Pa Honua 3 neighborhood since it is newly constructed. LBP hazards are not regulated under CERCLA, and do not have an ECP category assigned to LBP hazards; therefore, they are addressed in this ECP for disclosure purposes.

Pesticides/Herbicides. According to housing management, pesticides/herbicides have been legally applied to the interior of the homes at MCBH housing areas. Chlordane or other discontinued pesticides may have been applied indoors. This is a finding of concern requiring notification for the Class II (improvements) constructed prior to 1979 (Mololani and Ulupau neighborhoods). Pa Honua 3 was recently constructed (2007) and interior application of pesticides were not performed.

⁵ All asbestos surveys referenced were "routing surveys" of common accessible suspect materials and were not intended to be demolition surveys.

Polychlorinated Biphenyls (PCBs). Fluorescent light ballasts that contain PCBs may be present within the housing units constructed prior to the ban on PCB manufacturing in 1979 (Mololani and Ulupau neighborhoods). Since this building material is not regulated under CERCLA, no ECP category is assigned to this material. However, PCB containing light ballasts require proper handling and disposal during demolition and renovations, and they are addressed in this ECP for disclosure purposes.

Radon. Recent radon screening of the Mololani and Ulupau neighborhoods indicated radon levels below 4 pCi/L. No further radon testing is required for the remaining lifetime of these units. If these units are replaced in the future, radon screening would be required. Radon screening of the newly constructed Pa Honua 3 neighborhood has not been performed but is recommended.

Stormwater. Nine Mololani housing units (1766, 2028, 2030, 2070, 2076, 2163, 2178, 2180, 2212) have been impacted by erosion issues due to heavy rains. During storm events, soil carried by runoff is deposited around the units.

Other Environmental Concerns - Cultural Resources. The 634 housing units within the Mololani neighborhood are eligible for listing in the NRHP under Criterion C as properties embodying distinctive characteristics of family housing construction after World War II. The Mololani neighborhoods were constructed as part of the nationwide Capehart-Wherry Military Family Housing Program. A Program Comment issued by the Advisory Council on Historic Preservation (ACHP) in 2004 suggests that Wherry and Capehart Era (1949-1962) family housing may be eligible for listing in the NRHP. The Department of the Air Force and the Department of the Navy published their acceptance of the Program Comment in the Federal Register on November 18, 2005. The nationwide historic context, *Housing an Air Force and a Navy: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962)* (June 2007), identified no units of Particular Importance at military installations in the state of Hawaii including MCBH.

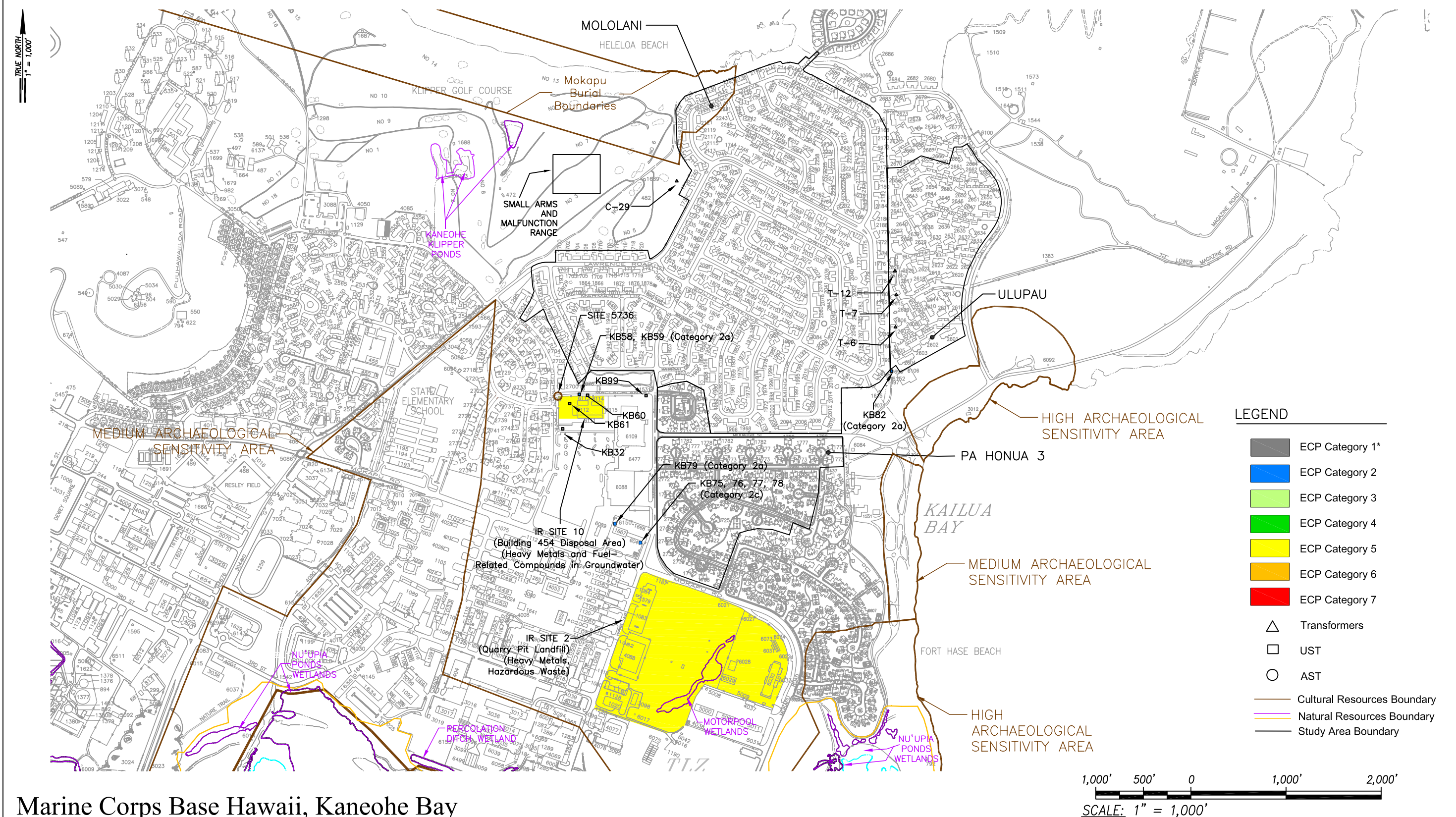
A complete summary of the findings of concern requiring notification for the Subject Property along with the ECP category for each item is provided in Table 6-1. The locations of significant findings (Category 1 and higher) are shown on Figure 6-1.

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Table 6-1. Environmental Condition of Property

Housing Area	Status	Date Built/ Occurrence	Former/ Current Use	Property Class	Property Categorization Factors and Disclosure Factors					Disclosure Factors													
					ECP	AUP	HS/HM/ HW	IR	Lead in Soil	Air	ACM	Cult Res	Land- fill	LBP	MW/ BW	Nat Res	Ord	Pest/ Herb	PCB	Potable Water	RM/ MW	Radon	WW/ SW
MOLOLANI Consists of 210 duplex buildings and 214 single buildings comprising 634 family units	Existing	1959/1960	Family Housing	II (improve- ments)	1	1 N	1 Y	1 N	NA	N	Y	N	N	Y	N	N	N	Y	Y	N	N	Y	WW-N SW-Y ①
				I (land)	1	1 N	1 N	1② N	1 Y④	N	Y	Y	N	NA	N	Y	N	Y	N	N	N	N	
PA HONUA 3 Consists of 106 duplex buildings comprising 212 family units	Existing	2007	Family Housing	II (improve- ments)	1	1 N	1 N	1 N	NA	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
				I (land)	1	1 N	1 N	1 ③ N	1 Y	N	Y	N	N	NA	N	Y	N	Y	N	N	N	N	N
ULUPAU Consists of 65 buildings comprising 296 housing units and 103 carports	Existing	1976	Family Housing	II (improve- ments)	1	1 N	1 Y	1 N	NA	N	Y	N	N	Y	N	N	N	Y	Y	N	N	Y	N
				I (land)	1	1 N	1 N	1 N	1 Y ④	N	Y	N	N	NA	N	Y	N	Y	N	N	N	N	N
<div>ACM AUP Cult Res ECP</div> <div>asbestos-containing material AST, USTs, and petroleum products cultural resources environmental condition of property</div> <div>HM HS HW IR</div> <div>hazardous materials hazardous substances hazardous wastes installation restoration</div> <div>N NA Nat Res MW/BW Ord</div> <div>No not applicable natural resources medical waste/biohazardous waste ordnance</div> <div>PCB Pest/Herb RW/MW WW/SW Y</div> <div>polychlorinated biphenyl pesticides/herbicides radioactive wastes/mixed wastes wastewater/stormwater Yes</div>																							
Note: The highest category assigned to a property categorization factor at a building/property determines the overall ECP category. Disclosure factors do not affect the overall ECP category of a building property																							
①. Finding of Concern for Housing Units: 1766, 2028, 2030, 2070, 2076, 2163, 2178, 2180, 2212.																							
②. IR site located on adjacent property – Building 454 Disposal Area (IR Site 10, Category 5).																							
③. IR site located on adjacent property – Quarry Pit Landfill (IR Site 2, Category 5).																							
④. No “community-wide” lead in soil issues based on Lead Risk Assessment; however, there may be isolated incidences of lead in soil throughout neighborhood.																							

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Marine Corps Base Hawaii, Kaneohe Bay

ENVIRONMENTAL CONDITION OF PROPERTY		
HAWAII PPV HOUSING PHASE 4 SUMMARY ENVIRONMENTAL CONDITION OF PROPERTY		FIGURE 6-1

REFERENCES: DoN 2006b

*Environmental Condition of Property (ECP) designation is explained in detail in Section 1.4 of this document.

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7. RECOMMENDED NOTIFICATIONS, COVENANTS AND RESTRICTIONS

Environmental findings of concern that require notifications, covenants, and restrictions include archeological features, asbestos, hazardous substances/hazardous materials/ hazardous waste, historical characteristics, LBP, lead-contaminated soil, natural resources, pesticides/herbicides, PCBs, radon, stormwater, and wastewater discharges. The Government finds the Subject Property suitable for the Public-Private Venture real estate action provided the Lessee complies with the general restrictions as detailed in the Ground Lease as well as the notifications, covenants, and restrictions for the Subject Property detailed in this section.

7.1. ARCHEOLOGICAL FEATURES

This ECP serves as the Government notification to the Lessee of the presence of archeological features at the Subject Property. The following notifications, covenants, and restrictions apply to the Subject Property:

Notifications:

1. The northern portion of the Mololani neighborhood is located within a cultural resource site, the Mokapu Burial Area. The Mokapu Burial Area occupies the sand dunes along North Beach and is listed in the NRHP. This site is the location of traditional Hawaiian burial ground from which close to 1,600 human burials have been recovered (DoN 2006a). Approximately 15 homes are currently sited in the Mokapu Burial Area. No houses will be constructed within the Mokapu Burial Area nor within the High Sensitivity Zone adjacent to the burial area. Prior to conducting ground disturbing activities, a review of proposed actions must be completed by the Government (DoN 2005a).
2. The area adjacent to the southern edge of Pa Honua and Ulupau borders a high archaeological sensitivity zone in the MCBH ICRMP (DoN 2006a). The wetland areas to the south are also frequented by endangered and protected species (DoN 2005a). This is a finding of concern for the Subject Property (the land and buildings) and coordination with personnel from MECPD will be necessary for all work in the neighborhood.

Restrictions:

1. The Lessee shall notify the Government prior to commencement of activities that will disturb or potentially disturb any of the archeological features within or adjacent to the housing areas Mololani, Pa Honua 3, and Uluapu.

7.2. ASBESTOS

This ECP serves as the Government notification to the Lessee of (1) the potential presence of ACM in building materials at the Subject Property and (2) the presence of ACM in facilities on the Subject Property. The following notifications, covenants, and restrictions apply to these issues:

Notifications:

1. ACM may be present in common materials such as floor tiles and mastic; linoleum flooring and mastic; vinyl sheet flooring; base cove; sink undercoating; pipe insulation; duct insulation; pitch and gravel roofing; and other building materials at the Subject Property. The 1997 Management Plan for MCBH Kaneohe (DoN 1997a, 1997b, 1997d) identified the presence of ACM in building materials at the Subject Property. Additional ACM may be present in materials not tested and/or inaccessible. This ECP serves as the Government's notification to the Lessee of the potential presence of ACM in building materials at the Subject Property.

Restrictions:

1. For any project that might disturb or encounter known or suspected ACM, construction specifications should contain provisions for worker health and safety and for disturbing, handling, and disposal of any portions of the material.
2. The Lessee shall remove or abate any asbestos that may be disturbed prior to making any facility or property improvements, renovations, or demolition activities, in accordance with all applicable federal and state laws and regulations.
3. The Lessee must test any suspect material types that were not previously tested and that would be disturbed during any alteration, modification, or renovation action.
4. The Government will require the Lessee to submit all construction and modification plans for approval prior to implementation and follow the approved Asbestos Management Plan included in the Ground Lease.

7.3. HAZARDOUS SUBSTANCES/HAZARDOUS MATERIALS/HAZARDOUS WASTES

This ECP serves as the Government notification to the Lessee of the potential presence of canec, lead and mercury contained in fluorescent light tubes, mercury contained in switches, and ODS in appliances at the Subject Property. The following notifications, covenants, and restrictions apply:

Notifications:

1. Lead and mercury-containing fluorescent light fixtures, mercury contained in switches, and ODS-containing appliances are potentially present at the Subject Property.

2. Canec ceilings panels are known to contain arsenic and may potentially be present in the housing units within the Mololani neighborhoods.
3. Radioactive material may potentially be present in the smoke detectors within the housing areas.

Covenants:

1. If such materials (lead and mercury-containing fluorescent light tubes, mercury-containing in switches, and/or ODS-containing appliances) are identified, the Lessee shall be responsible for maintenance, removal, and disposal of the materials prior to renovation or demolition of the residential buildings to eliminate the potential threat to human health and in accordance with all appropriate regulations.
2. The Lessee shall comply with the approved Hazardous Materials Management Plan included in the Ground Lease.

7.4. HISTORICAL CHARACTERISTICS

This ECP serves as the Government notification to the Lessee of the presence of historical characteristics at the Mololani neighborhood. The following notifications, covenants, and restrictions apply to the Subject Property:

Notifications:

1. The 634 housing units within the Mololani neighborhood are eligible for listing in the NRHP under Criterion C ⁶, as properties embodying distinctive characteristics of single family housing construction after World War II. The Mololani neighborhoods were constructed as part of the nationwide Capehart - Wherry Military Family Housing Program. A Program Comment issued by the Advisory Council on Historic Preservation (ACHP) in 2004 suggests that Wherry and Capehart Era (1949-1962) family housing may be eligible for listing in the NRHP. The Department of the Air Force and the Department of the Navy published their acceptance of the Program Comment in the Federal Register on November 18, 2005. The nationwide historic context, *Housing an Air Force and a Navy: The Wherry and Capehart Era Solutions to the Postwar Family Housing Shortage (1949-1962)* (June 2007), identified no units of Particular Importance at military installations in the state of Hawaii including MCBH.

Covenants:

1. The Lessee shall comply with the Programmatic Agreement when renovating or demolishing any of the buildings within the Historic Housing areas.

⁶ Criterion C deals with properties whose significance is derived from its architectural, engineering, and/or physical attributes.

7.5. LEAD-BASED PAINT

This ECP serves as the Government notification to the Lessee of the presence of LBP in facilities on the Subject Property. The following notifications, covenants, and restrictions apply to structures at the housing area:

Notifications:

1. LBP is present in buildings on the Subject Property. LBP was confirmed to be present through sampling conducted for the 1997 Lead Activity Summary for MCBH Kaneohe (DoN 1997a) and the 2007 site inspections (DoN 2007b, DoN 2007c). Other surfaces in the housing area, not tested as part of these surveys, may contain lead paint or lead dust. Lead from paint, paint chips, and dust can pose health hazards if not managed properly.

Covenants:

1. The Lessee shall comply with the approved Lead-Based Paint Management Plan.
2. Prior to the use of buildings for residential habitation, the Lessee is responsible to ensure that the unit is acceptable for housing in accordance with applicable laws, rules, and in accordance with the Guidelines for Evaluation and Control of Lead Based Paint Hazards in Housing, promulgated by the HUD pursuant to Title X of U.S. Public Law 102-550.
3. Prior to use of nondwelling buildings or facilities commonly used by pregnant tenants and children under six years of age, such as a playground or community center, the Lessee is responsible to ensure that the facility is acceptable for use in accordance with all applicable laws, rules, and regulations.
4. The Lessee shall maintain painted surfaces within the leased property during the duration of the lease to prevent possible release of any lead that may be present. All painted surfaces shall be maintained in good condition, in compliance with applicable laws and regulations, such that they do not contaminate the surrounding soil or pose a risk to human health and safety.
5. The Lessee must test any paint on surfaces not previously tested in homes constructed pre-1980 that may be disturbed during alteration, modification, or renovation activities. If the paint is identified as LBP, the Lessee must abate the hazards associated with the LBP in accordance with all applicable federal, state and local laws and regulations, including Occupational Safety and Health Administration (OSHA) regulations.
6. The Lessee will only construct, alter, or modify (to include paint stripping or sanding) facilities or structures in accordance with the approved Lead Management Plan included in the Ground Lease and shall make all LBP test results available to the Government, upon request.
7. The Lessee will ensure that all LBP removed during Lessee's abatement, modification, or renovation work is contained and properly disposed of and does not contaminate the surrounding environment. LBP chips and particles will be

handled as hazardous waste, if necessary for compliance with HAR, Title 11, Chapters 260 through 279.

8. In the absence of test data, the Lessee will treat all painted surfaces as having the potential to contain lead. When disturbing painted surfaces, the Lessee will use appropriate procedures and equipment to limit occupational, environmental, and occupant exposure. The Lessee will clean all dust and chips generated by the disturbance and remove all waste. All work will be conducted in accordance with applicable federal, state, and local laws, rules, and regulations.

7.6. LEAD-CONTAMINATED SOIL

This ECP serves as the Government notification to the Lessee of the presence of Lead in Soil on the Subject Property. The following notifications, covenants, and restrictions apply to structures at the housing area:

Notifications:

1. Due to the presence of lead-based paint on internal and external building surfaces throughout the housing areas, lead-contaminated soil may be encountered within the housing areas.

Covenants:

1. The Lessee shall comply with the approved Lead-Based Paint Management Plan when potentially encountering lead-contaminated soil.

7.7. NATURAL RESOURCES

This ECP serves as the Government notification to the Lessee of the presence of wetlands adjacent to the Subject Property. The following notifications, covenants, and restrictions apply to structures at the housing area:

Notifications:

1. The Nu'upia Pond Wildlife Management Area was set aside in 1966 as a wildlife conservation area, as a result of an agreement among MCBH Kaneohe Bay, State of Hawaii, the U.S. Department of the Interior, and the DoN. The Nu'upia Ponds represent one of the most important nesting and feeding areas for the endangered Hawaiian Stilt (*Ae`o*, *Himantopus mexicanus knudseni*) on the Island of Oahu. In addition it is frequented by three other endangered Hawaiian waterbirds: (1) `Alae `Ula, Hawaiian Gallinule or *Gallinula chloropus sandvicensis*; (2) A`lae Ke`oke`o, Hawaiian Coot or *Fulica americana alai*; and (3) Kola Moali, Hawaiian Duck or *Anas wyvilliana* (USMC 2001). Appendix A of this document contains excerpts from the MCBH Natural Resources Management Plan/Environmental Assessment (USMC 2001). Appendix C of the 2006 MCBH INRMP Update contains the most updated list of species found at MCBH. The Hawaiian Duck or Koloa Moali (*Anas wyvilliana*), Newell's Townsend's (formerly Manx) shearwater or `A`o (*Puffinus puffinus newelli*), Hawaiian Stilt or Ae`o (*Himantopus mexicanus knudseni*), and Hawaiian Owl or Pueo (*Asio flammeus sandwichensis*) are also known to occur at

MCBH Kaneohe. Additionally, there are a number of birds protected under the Migratory Bird Treaty Act that visit or inhabit MCBH Kaneohe.

2. Other endangered or threatened species in and around MCBH Kaneohe includes the Hawaiian monk seal (*Monachus schauinslandi*). In addition, there are the following reptiles: (1) green sea turtle (*Chelonia mydas*), (2) hawksbill sea turtle (*Eretmochelys imbricate*), (3) leatherback sea turtle (*Dermochelys coriacea*), (4) Pacific olive ridley sea turtle (*Lepidochelys olivacea*), and (5) loggerhead. The green sea turtle, the hawksbill, and the leatherback are known to occur in Hawaiian waters. The olive ridley and the loggerhead have been recorded, but only as rare visitors.

Covenants:

1. The Lessee is also responsible for any natural resources damage assessment costs, should their activities advertently or inadvertently cause harassment or harm to these species (e.g., mechanical equipment breakdown injures a bird, or sewage spill causes a fish kill in Nu'upia Ponds).
2. All neighborhoods have concerns regarding landscaping or plant species alterations. Any changes must be approved by the Government and adhere to the MCBH Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA) (2001) as updated in the MCBH INRMP (2006), Appendix D and component Master Landscaping Guidelines (USMC 2006).
3. Prior to any action that would damage a mature tree(s) on the Subject Property; the Lessee shall consult with a landscape architect and/or arborist. If proposed actions will result in a significant loss of mature trees on the Subject Property, the Lessee shall notify the Government prior to implementing such action.
4. All neighborhoods have concerns regarding cultural resources. Any changes must be approved by the Government and adhere to the MCBH Integrated Cultural Resources Management Plan (ICRMP).

Restrictions:

1. The Lessee is required to take action to protect wetlands from destruction, loss, or degradation.
2. If monk seals are hauled out on the beaches, the seals shall not be approached closer than 150 feet (45 meters). When monk seals are present, actions that would disturb the monk seal (i.e., construction, excessive noise, etc.) should be avoided by the Lessee and other property users. Any action that disturbs the seal may be viewed as a "take" under the Endangered Species Act, and should be avoided.

7.8. PESTICIDES/HERBICIDES

This ECP serves as the Government notification to the Lessee of the potential presence of pesticide/herbicides at the Subject Property. The following notifications, covenants, and restrictions apply:

Notification:

1. Chlorinated hydrocarbon pesticides, including chlordane, are known to have been legally applied at the Subject Property.

Covenant:

1. The Lessee shall comply with the approved Pesticide Soils Management Plan included in the Ground Lease.
2. Prior to offsite disposal of chlorinated hydrocarbon pesticide-impacted soil, the Lessee shall perform the Toxicity Characteristic Leaching Procedure (TCLP) test. The Lessee shall handle and dispose of TCLP tested soil with levels greater than RCRA limit as a "hazardous waste." The Lessee shall maintain any interim soil control measures that may be currently in place on the Subject Property. Interim control measures might include covering soil with mulch, grass, shrubs, or other types of vegetation to prevent soil from being exposed.
3. For any project that will potentially disturb pesticide-impacted (defined as a concentration greater than the State of Hawaii Department of Health's Tier II Environmental Action Levels) soil, construction specifications will include worker and public health protection measures, including but not limited to, personnel and area monitoring, and use of water sprays to minimize fugitive dust. Pesticide-impacted soil disturbed during construction will be addressed in accordance with applicable federal, state, and local laws and in a manner that is protective of human health and the environment. This may include but is not limited to: (1) disposed of off-site; (2) covered with an appropriate cap; or (3) reused under building concrete slabs or (4) other Government approved method.

7.9. POLYCHLORINATED BIPHENYLS

This ECP serves as the Government notification to the Lessee of the potential presence of PCB-containing light ballasts at the Subject Property. The following notifications, covenants, and restrictions apply:

Notification:

1. PCB-containing light ballasts are potentially present at the Subject Property.

Covenant:

1. If such materials (PCB-containing light ballasts) are identified, the Lessee shall be responsible for maintenance, removal, and disposal of the materials in accordance with all appropriate regulations, including 40 CFR Part 761.
2. The Lessee will abate potential PCB-containing ballasts prior to renovation or demolition of the residential buildings to eliminate the potential threat to human health.

7.10. RADON

The TSCA states that the head of each federal department or agency that owns a federal building shall conduct a study to determine the extent of radon contamination. A radon survey (statistical screening) was conducted at the MCBH housing areas Kaneohe Bay from December 2004 to May 2005 except neighborhoods that were under construction at that time. DoD policy is to ensure that any available and relevant radon assessment data pertaining to property being transferred shall be included in property transfer documents. DoD policy is not to perform radon assessment and mitigation prior to transfer unless otherwise required by applicable law (DoD 1995).

Notifications:

1. The Lessee is notified through this ECP of the available and relevant radon data. Radon is a naturally occurring, radioactive inert gas formed by the radioactive decay of radium atoms in soil and rock. Radon can enter a building through cracks and openings in the ground and accumulate and distribute unevenly within a building until it reaches concentrations dangerous to the human health. It is odorless, tasteless and colorless and can only be detected by proper test kits and instrumentation. Long-term exposure to radon and/or its decay products presents a significant health risk to humans, which health risk may include but not limited to, lung damage and cancer.
2. The Lessee is notified through this ECP that testing for radon is recommended for the Pa Honua 3 neighborhood. The Lessee will test and mitigate, if required, the units according to all applicable federal, state, and local laws and regulations, including the approved Radon Management Plan included in the Ground Lease.
3. The Lessee is notified through this ECP that all newly constructed housing units will be tested and mitigated, if required, by the Lessee. The Lessee will test and mitigate, if required, the units according to all applicable federal, state, and local laws and regulations, including the approved Radon Management Plan included in the Ground Lease.
4. The Lessee is notified through this ECP that any major renovations of the housing units or new construction in the Subject Property may require additional radon testing. The Lessee will test and mitigate, if required, the units according to all applicable federal, state, and local laws and regulations, including the approved Radon Management Plan included in the Ground Lease.

7.11. STORMWATER & WASTEWATER

This ECP serves as the Government notification to the Lessee of the presence of stormwater discharges at the Subject Property. The Lessee would have to comply with the Government permit requirements and their base Best Management Practices. However, there may be cases where a separate NPDES Permit is required as follows: discharge of construction storm water from construction activities that disturb more than one acre of land, any new outfall/discharges, non-stormwater discharges, and any industrial activity that falls under NPDES regulations. The following notifications, covenants, and restrictions apply:

Notifications:

1. Nine Mololani housing units (1766, 2028, 2030, 2070, 2076, 2163, 2178, 2180, and 2212) have been impacted by heavy rains in the past.
2. A NPDES permit will be required for storm water discharges from the Subject Property to navigable waters of the United States. The Government currently has a NPDES permit for the MCBH Kaneohe and surrounding area which would not be transferable to the Lessee. The Lessee shall operate under the Government's current permit as a "tenant" and shall comply with all terms and conditions of the permit.
3. The use of a wastewater system at the Subject Property will require compliance with the requirements of the Government-owned treatment works.

Covenants:

1. The Lessee shall, if directed by the Government, obtain a Connection Discharge permit from other government agencies (e.g., Department of Transportation [DOT], City and County [C&C] of Honolulu, etc.) for the use of their drainage system (if required). The Lessee agrees to inform and coordinate with the Government for any activity involving the modification (includes new work) of the existing system.
2. The Lessee shall not dispose of any petroleum products or hazardous substances into the wastewater system. The Lessee will be responsible for meeting all applicable wastewater discharge standards and conditions.
3. The Lessee shall comply with the approved Stormwater Management Plan included in the Ground Lease.

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8. CERTIFICATION

Environmental Science International has conducted an ECP for the Subject Property located on the 2,951 acre MCBH Kaneohe Family Housing, Oahu, Hawaii (currently owned by the Government). The Class I Property (land) beneath the housing is proposed to be leased to a Lessee and the Class II Property (improvements) is proposed to be transferred to a Lessee by the Government for use as family housing.

MCBH Kaneohe Bay is located on the windward side of Oahu, and occupies the entire 2,951 acre Mokapu Peninsula. The Subject Property, as referred to in this ECP, consists of the three housing neighborhoods located throughout the base and the land beneath such neighborhoods. MCBH Kaneohe Bay is located approximately 13.5 miles northeast of Honolulu. The Subject Property occupies Tax Map Key (TMK) numbers 4-4-08:001, 4-4-09:003 and 4-4-11:001. The location of the Subject Property is shown in Figure 1-1. A site layout is shown in Figure 1-2.

Based on records reviews, site inspections, and interviews, the environmental professionals concur that the environmental conditions of the property are as stated in this document to the best of their knowledge and belief, and this property is suitable for the proposed real estate action. The real estate professionals acknowledge these restrictions and/or land use controls identified above and will ensure they are made a part of the resulting real estate document.

Environmental Professional:

(b) (6)

Project Manager
Environmental Science International

28 AUG 2007
Date

Real Estate Professional:

(b) (6)

Realty Officer
Naval Facilities Engineering Command, Pacific

29 Aug 07
Date

Property Owner (Activity or Region):

(b) (6)

Director, Environmental Compliance and Protection Department
Marine Corps Base Hawaii

7 SEP 07
Date

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APPENDIX A

Physical Setting Marine Corps Base Hawaii

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PHYSICAL SETTING

MARINE CORPS BASE HAWAII KANEOHE BAY

Climate

Northeasterly trade winds prevail over the island of Oahu approximately 80 percent of the time, with average wind speeds ranging from 10 to 15 miles per hour. The trade winds blow most strongly and consistently from April through November. Southerly or “Kona” winds occur roughly less than half the time during the months of December through March.

The northeasterly trade winds carry a large quantity of moisture from the Pacific Ocean to the island. Orographic lifting as the trade winds encounter the Koolau mountain range causes the air temperature to drop and air moisture to precipitate. The mean annual precipitation at the upper reaches of the Koolau Mountains is approximately 150 inches, and the windward side of the island generally experiences more rainfall than the leeward side. The orographic effect also tends to produce most of the precipitation in the form of passing showers in the evenings and early mornings.

During Kona wind conditions, the relative humidity tends to rise, and the southern side of the island may experience periods of intense rainfall. Persistent Kona winds can also carry volcanic gases from the active volcano on the Big Island to Oahu, which can cause a haze, or volcanic fog to form over the island.

The average annual rainfall at MCBH Kaneohe Bay, measured over a 24 year period, was 38.8 inches. Seventy-five percent of the rainfall occurs in the winter season, between the months of October and April. June is the driest month of the year and received about 3 percent of the annual rainfall (DoN 1993).

Topography

The topography of Oahu is dominated by four geomorphic features: the eastern Koolau Range, western Waianae Range, central Schofield Plateau, and surrounding Coastal Plain. The Koolau and Waianae Mountain Ranges trend from the northwest to the southeast; the larger Koolau Range rises sharply to a maximum elevation of 3,200 feet above mean sea level (msl). The Schofield Plateau occupies the central portion of Oahu, between the Koolau and Waianae Ranges. The coastal plains are topographically low-lying areas present at the northern and southern ends of the Schofield Plateau (Stearns 1985).

The Mokapu peninsula containing MCBH Kaneohe Bay is composed of four volcanic craters. Ulupau Head dominates the peninsula and rises to an elevation of approximately 850 feet. Puu Hawaiioloa and Pyramid Rock have approximate elevations of 335 feet and 70 feet, respectively. Elevation at MCBH Kaneohe ranges from 0 feet msl to 850 feet msl (DoN 1993).

Geology

The Hawaiian Archipelago is a chain of seamounts and islands in the North Pacific extending 2,600 kilometers (km) west by northwest from the largest island of Hawaii. Volcanic rocks are the dominant rock type and consist of basaltic flows, caldera and dike complexes, and pyroclastics. Sediments include limestone reefs and dunes, beach and dune sands, and alluvium deposited near present day and ancient shorelines, typical of tropical to subtropical

atoll cycles. Some ancient limestone reefs and dunes are found inland due to climatic and sea level fluctuations.

The island of Oahu, the third largest of the Hawaiian chain, was formed by two volcanoes, Koolau and Waianae. The older Waianae volcano was formed from a caldera and rift zones found on the western portion of the island, and is 22 miles long with a maximum height of 4,025 feet above msl at Mount Kaala. The range is composed almost entirely of basaltic rock erupted between 2.8 to 3.5 million years ago from three rift zones. Basaltic flows of the Waianae formation are subdivided into three structurally and chemically distinct members (Macdonald et.al. 1983). These flows range from 2.5 to 3.1 million years old and are overlain by the 1.8 to 2.7 million year old flows of the Koolau volcano (Doell and Dalrymple 1973). The Koolau Range forms the eastern part of Oahu and forms the backdrop of Honolulu. The range is 37 miles long with a maximum elevation of 3,105 feet above msl at Puu Konahuanui. It is the younger of the two ranges and is comprised of thin, narrow tholeiitic basaltic lava flows piled on each other with minor amounts of volcanic ash and numerous dikes. Rocks of the Koolau volcano are found on the eastern and northeastern portion of the island and are the result of hundreds of thin basalt flows one to three meters thick. The Koolau flows erupted from a main caldera in the vicinity of present day Kailua, along with two main rift zones extending northwest and southeast of the caldera.

Following these main volcanic events, stream erosion dissected the island and created two belts of mountain ranges, the northwest oriented Waianae Range on the west side of the island and the southeast oriented Koolau Range on the east side of the island. The Schofield Plateau, which is located in the central portion of the island, was formed by lavas from the Koolau Range banking against the older Waianae Range (Stearns 1985).

Less than 600,000 years ago during a time known as the Pleistocene period, a third and violent series of approximately fifty eruptions in the south interrupted the erosional period. Tuff and pyroclastics known as the Honolulu Formation were deposited by these eruptions until as recently as 12,000 years ago (Dalrymple and Lanphere 1969). Fringing and barrier coral reefs and beach sediments (lithified calcareous dunes) formed during the later volcanics and are interlayer with rocks of the Honolulu Formation. Deposition of calcareous sediments continued through the Pleistocene period but was greatest during a warm, interglacial period around 500,000 years ago.

Limestone reefs formed during this period, when the sea level was about 30 meters higher than present, are now found inland as "emerged" reefs (Stearns 1985). The constantly fluctuating sea level during the Pleistocene period created shore platforms and cut notches into ancient reefs and lithified dunes leaving behind evidence of up to 35 "stands" of sea (Stearns 1985). Examples of ancient shorelines are found throughout the Hawaiian Islands, but are most prominent on Oahu.

Three volcanic vents are recognized on the Mokapu Peninsula: Ulupau Head, Puu Hawaii Loa, and Pyramid Rock. These vents are believed to be among the oldest of the Honolulu Volcanic Series. The Ulupau Head is a tuff cone formed by hydromagmatic eruptions. Puu Hawaii Loa is a cinder cone formed by subaerial eruptions. Pyramid Rock is a deeply eroded vent in which the feeder dike has been exposed. Ulupau tuff rests on a thick flow of nephelinite from the cinder cone, Puu Hawaii Loa, which is older than Ulupau Head. Pyramid Rock probably erupted even earlier than Puu Hawaii Loa (DoN 1993).

Soils

Soils on Mokapu Peninsula are derived locally from the tuffaceous, cinder cone and nephelinite flow rocks which form the peninsula. Other minor soil sources include beach sands, calcified sand dunes, and fill material derived from local shallow marine deposits or brought into the area by currents. Mapping of the soils at MCBH Kaneohe indicate that the soils are thin and not well developed. Subsurface soils at the base range from artificial fill composed of silt, silty sand, coral and gravel to silty carbonate sands, loose sand, soft and firm silts and clays, dense coral and weathered basalt, and loose coralline sediments (U.S Department of Agriculture [USDA] 1972)

Surface Hydrology

With the exception of a few causeways to the south, Mokapu Peninsula is virtually surrounded by water. The surrounding water bodies are Kaneohe Bay to the west and southwest, the Pacific Ocean to the north and east, Kailua Bay to the southeast, and a series of ancient Hawaiian fishponds, known collectively as the Nu'upia Ponds, to the south.

Hydrogeology

Wells and water tunnels on the windward side of the Koolau Range indicate a rapid decline of groundwater levels in Koolau basalt toward Mokapu Peninsula to the northeast. Near the Koolau crest, five or six miles inland from Mokapu, the ground water elevation is at several hundred feet above sea level. This water is impounded dike water and not considered part of the basal aquifer. Near Kapaa Quarry, two miles inland from Mokapu, the Koolau groundwater head is about 16 feet above sea level. Northwest-southeast trending dike swarms in the Koolau basalt of the area probably inhibit the movement of fresh groundwater toward the peninsula. At Mokapu, groundwater in the deep Koolau basalt may be under some artesian pressure, but the water is probably brackish or saline (DoN 1993).

Shallow, unconfined groundwater has been found at Mokapu Peninsula in a number of soil borings and test pits completed for foundation investigations. Water level data reported in these investigations were referenced to mean low water. Mean low water is approximately 0.7 feet below mean sea level (DoN 1993).

Natural Resources

The Nu'upia Pond Wildlife Management Area was set aside in 1966 as a wildlife conservation area, as a result of an agreement among MCBH Kaneohe Bay, State of Hawaii, the U.S. Department of the Interior, the DoN. The Nu'upia Ponds represent one of the most important nesting and feeding areas for the endangered Hawaiian Stilt (*Ae'o*, *Himantopus mexicanus knudseni*) on the Island of Oahu (USMC 2001). In addition it is frequented by three other endangered Hawaiian waterbirds: (1) 'Alae 'Ula, Hawaiian Gallinule or *Gallinula chloropus sandvicensis*; (2) A'lae Ke'oke'o, Hawaiian Coot or *Fulica americana alai*; and (3) Kola Moali, Hawaiian Duck or *Anas wyvilliana* (USMC 2001). Appendix A of this document contains excerpts from the MCBH Natural Resources Management Plan/Environmental Assessment (USMC 2001). Appendix C of the 2006 MCBH INRMP Update contains the most updated list of species found at MCBH.

The preferred habitat of the Hawaiian Coot or A'lae Ke'oke'o (*Fulica americana alai*) and the Hawaiian Gallinule or 'Alae 'Ula (*Gallinula chloropus sandvicensis*) includes densely vegetated

marshes with associated open water; fresh or brackish water is preferred over salt water. There have been confirmed sightings of the coot and a confirmed reproducing population of Hawaiian Gallinule at the MCBH Kaneohe Bay golf course ponds (personal communication with Dr. Diane Drigot, as documented in State Waterbird Survey count reports since the 1980s and as discussed in MCBH's 2001 *MCBH INRMP/EA* and in the Feb 2004 *Final Report: MCBH Klipper Golf Course Ponds Environmental Enhancement, MCBH Kaneohe Bay, HI*, by Hawaii Design Associates). These species occurs at the Nu'upia Ponds, particularly in the freshwater drainage canals leading to the Nu'upia Ponds, and other wetland areas. The Hawaiian Duck or Koloa Moali (*Anas wyvilliana*), Newell's Townsend's (formerly Manx) shearwater or 'A'o (*Puffinus puffinus newelli*), Hawaiian Stilt or Ae'o (*Himantopus mexicanus knudseni*), and Hawaiian Owl or Pueo (*Asio flammeus sandwichensis*) are also known to occur at MCBH Kaneohe.

Additionally, there are a number of birds protected under the Migratory Bird Treaty Act that visit or inhabit MCBH Kaneohe:

Wedge-tailed shearwater (*Puffinus pacificus*), Christmas shearwater (*Puffinus nativitatis*), Bulwer's petrel (*Bulweria bulwerii*), Masked or blue-face booby (*Sula dactylatia personata*), Red-footed booby (*Sula sula rubripes*), Great frigate bird (*Fregata minor*), Cattle egret (*Bubulcus ibis*), Pintail (*Anas acuta*), Northern shoveler (*Spitula clyperta*), American golden plover (*Pluvialis dominica*), Ruddy turnstone (*Arenaria interpres*), Wandering tattler (*Tringa inlana*), Bristle-thighed curlew (*Numenius tahitiensis*), Sanderling (*Crocethia alba*), Gray-backed tern (*Sterna lunata*), Brown noddy (*Anous stolidu pileatus*), and Laysan albatross (*Diomedea immutabilis*) (USMC 2001). For the most up to date list of all the protected species in these categories (Migratory, Endangered, Threatened, etc.), consult the 2006 USMC INRMP Update.

Other endangered or threatened species in and around MCBH Kaneohe includes the Hawaiian monk seal (*Monachus schauinslandi*). In addition, there are the following reptiles: (1) Green sea turtle (*Chelonia mydas*), (2) Hawksbill sea turtle (*Eretmochelys imbricate*), (3) Leatherback sea turtle (*Dermochelys coriacea*), (4) Pacific olive ridley sea turtle (*Lepidochelys olivacea*), and (5) loggerhead. The green sea turtle, the hawksbill, and the leatherback are known to occur in Hawaiian waters. The olive ridley and the loggerhead have been recorded, but only as rare visitors. For the most up to date list of all the protected species in these categories (Migratory, Endangered, Threatened, etc.), consult the 2006 USMC INRMP Update

MECPD personnel indicate that protected and endangered bird species do frequent the Water Remediation Facility (WRF) and can also migrate to other areas on base. Endangered birds are not only found inside the boundaries of the wetlands on MCBH Kaneohe Bay, they can be routinely found inside the polishing lagoon at the WRF and, when it rains, they routinely and predictably disperse to opportunistically feed in rain puddles and ephemeral ponds/drainage ditches around the entire base. Since several species of federally-protected birds (some endangered) routinely feed inside the open-face chambers of the WRF infrastructure, private operators will be required to maintain close coordination with MCBH government environmental personnel so that MCBH government personnel continue to have unfettered access to survey, monitor the health of, and trap predators of these protected, public trust resources species under MCBH jurisdiction. Private operators are also responsible for any natural resources damage assessment costs, should their activities advertently or inadvertently cause harassment or harm to these species (e.g., mechanical equipment breakdown injures a bird, or sewage spill causes a fish kill in Nu'upia Ponds).

Since some of MCBH Kaneohe Bay's utilities infrastructure is located either across or adjacent to MCBH Kaneohe Bay's jurisdictional wetlands, any non-governmental entity responsible for utilities infrastructure in these areas, where endangered waterbird species and other protected aquatic species also reside, is required to work closely with MCBH Environmental staff to coordinate permit requirements for disturbance to resident wetland resources. For instance, if privatized utility operators need to access Nu'upia Ponds to repair/ maintain the overland effluent pipeline infrastructure, locations and type of access and actions must be coordinated with MCBH Environmental staff. MCBH Environmental staff may require modification to the nature or timing of the action to avoid adverse impacts to protected resources. Routine repair work on the Ponds portion of the effluent pipeline must be scheduled during the non-nesting months of the year to avoid adverse effect on resident endangered waterbirds. If work must be done during that timeframe, the proponent must perform a Biological Assessment with qualified biological personnel regarding the impacts and proposed mitigation measures, and have it reviewed by the MCBH Environmental Department and regulators (U.S. Fish and Wildlife Service) via the Section 7 Endangered Species Act consultation process. This type of coordination is routinely performed now, with government operators of MCBH Kaneohe Bay utilities and must continue, even under privatized conditions. The government remains responsible to ensure appropriate laws and regulations are followed with respect to management of public trust resources under their jurisdiction, a responsibility which cannot be privatized.

Another concern is that some protected migratory birds are attracted to electrical light fixtures and have collisions with utility lines and buildings on a seasonal basis. For example, hundreds of federally-protected wedge-tailed shearwaters nest along coastlines and dune burrows at MCBH Kaneohe Bay. During October through December, when juveniles are ready to fly, they are attracted/distracted by urban lighting and fly into the light rather than out to sea. The young birds have collisions and injuries with lighting infrastructures and buildings, triggering an annual "shearwater fallout" alert on Base. MCBH environmental staff must coordinate with base tenants, residents, and utility operators and collect/transfer any injured birds to appropriate authorities with appropriate permits. Private utility operators would be required to be engaged in this process in order to help avoid harm to these resources. Depending on severity of the problem, alteration to night lighting infrastructure may be required by U.S. Fish and Wildlife Service regulatory reviewers.

Cultural Resources

A total of 52 archeological sites have been identified during numerous archeological investigations conducted at Mokapu Peninsula. Archeological surveys and testing were conducted in three project housing areas: Hawaii Loa, Nani Ulupau, and Pa Honua. Human remains have been encountered at Kaluapuni and Nani Ulupau during ground-disturbing work related to construction (DoN 2006).

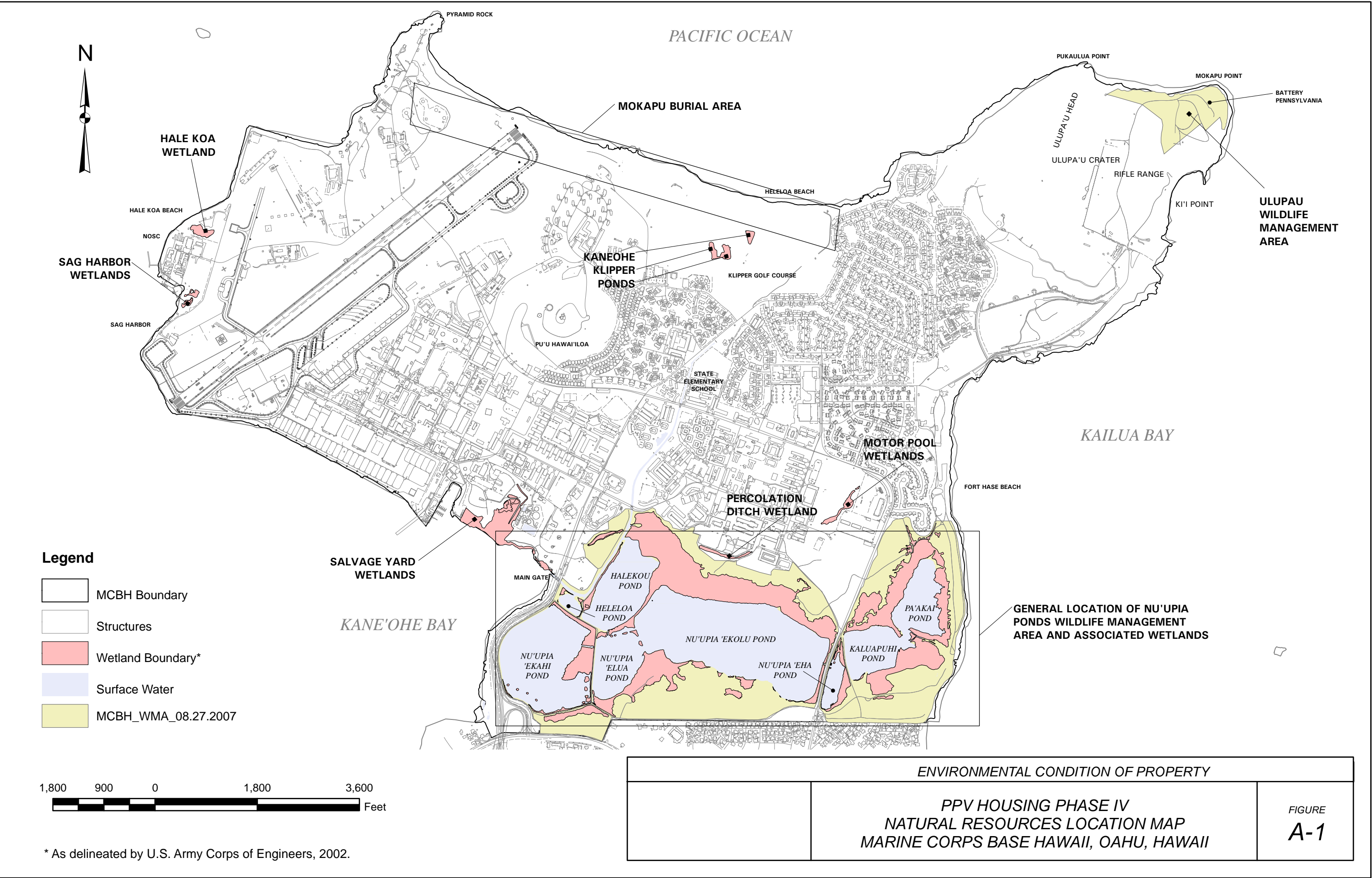
The following summarizes the archeological areas identified within or adjacent to project housing areas.

Mololani: The northern portion of Mololani is located within a cultural resource site, the Mokapu Burial Area (Archeological Site 1017). Approximately 1,600 human burials have been recovered from this traditional Hawaiian burial ground and the site was listed in National Register of Historic Places (NRHP) in 1972.

Pa Honua 3: The area east and south of the neighborhood is located within the area designated in the MCBH ICRMP as medium and high archeological sensitivity zones. These zones have a medium and high level of potential for the presence of subsurface archeological deposits associated with Site 1002, the Mokapu Peninsula Fishpond Complex (Nu'upia Ponds) which are located south of the housing area (USACE 2006). However, considering the distance between these zones and the southern and eastern portions of the neighborhood that comprises the Subject Property, it is unlikely that this will impact the neighborhood.

Ulupau, central and southern portion: The area adjacent to the southeastern edge of the neighborhood is located within the area designated in the MCBH ICRMP as a high archeological sensitivity zone. This zone has a high level of potential for the presence of subsurface archeological deposits (USACE 2006). Human remains have been encountered during previous construction at the adjacent Nani Ulupau neighborhood.

Prior to any ground disturbance on base (i.e., excavation, construction, or demolition activities) a review of the proposed action by the MCBH Environmental Department must be completed (personal communication, (b) (6) 2005).



* As delineated by U.S. Army Corps of Engineers, 2002.

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APPENDIX B

Reference Documentation

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Reference Form No	Document
1	Department of the Navy (DoN). 2005. <i>Environmental Baseline Survey to Support the Utility Privatization of Marine Corps Base Hawaii's Electrical Distribution and Wastewater Systems, MCBH Kaneohe Bay and Building 700 at MCBH Bellows, Oahu, Hawaii</i> . Prepared for NAVFAC PACIFIC. Prepared by Environet, Inc. May 2005.
2	DoN. 2006. <i>Environmental Assessment, Hawaii PPV Housing Phase II, Marine Corps Base Hawaii</i> . Prepared by NAVFAC Hawaii. 5 May 2006.
3	DoN. 2006. <i>Environmental Baseline Survey for Public Private Venture, Various Marine Corps Base Hawaii Housing Areas: Kaneohe, Camp H.M. Smith, and Manana, Oahu Hawaii</i> . Prepared for NAVFAC PACIFIC. Prepared by Environmental Science International, Inc. August 2006.
4	Marine Corps Base Hawaii (MCBH). 2006. Environmental Assessment (EA) of the Integrated Cultural Resources Management Plan (ICRMP) for Marine Corps Base Hawaii (MCBH), Oahu, Hawaii. Prepared for USACE. Prepared by Wil Chee – Planning and Environmental, Inc. May 2006.
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7	USACE. 1994. <i>Underground Storage Tank (UST) Closure Report, UST ID No. KB-58 and KB-59</i> . Prepared for USACE. Prepared by Morrison Knudsen Corporation. 30 December 1994.
8	USACE. 1994. <i>Underground Storage Tank (UST) Closure Report, UST ID No. KB-60</i> . Prepared for USACE. Prepared by Morrison Knudsen Corporation. 30 December 1994.
9	USACE. 1994. <i>Underground Storage Tank (UST) Closure Report, UST ID No. KB-61</i> . Prepared for USACE. Prepared by Morrison Knudsen Corporation. 30 December 1994.
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11	USACE. 1998. <i>Closure Report, Underground Storage Tank (UST) KB-79</i> . Prepared for USACE. Prepared by Morrison Knudsen Corporation. 5 October 1998.
12	USACE. 1999. <i>Closure Report Underground Storage Tank KB-82 at Marine Corps Base Hawaii, Kaneohe, Oahu</i> . Prepared for USACE. Prepared by Morrison Knudsen Corporation. 26 July 1999.
13	USACE. 1994. <i>Underground Storage Tank (UST) Closure Report, UST ID No. KB-99</i> . Prepared for USACE. Prepared by Morrison Knudsen Corporation. 30 December 1994.
14	DoN 1997, <i>Asbestos Activity Summary, MCB Kaneohe</i> . Prepared by Department of the Navy, Navy PWC, Energy and Environmental Engineering Branch, Norfolk, VA. August 1997.
15	DoN. 1997. <i>Asbestos Management Plan, Capehart, MCB Kaneohe, Kaneohe HI</i> . Prepared by Navy Public Works Center. April 1997.

Reference Form No	Document
16	DoN. 1997. Asbestos Management Plan, Ulupau Housing, MCB Kaneohe, Kaneohe HI. Prepared by Navy Public Works Center. April 1997.
17	DoN. 1997. <i>Lead Activity Summary, MCB Kaneohe Bay</i> . Prepared by Navy Public Works Center. August 1997.
18	DoN 1996, <i>Lead Management Plan, FY63 Housing, MCB Kaneohe, Kaneohe, HI</i> . Prepared by Department of the Navy, Navy PWC, Energy and Environmental Engineering Branch, Norfolk, VA. November 1996.
19	DoN 1997, <i>Lead Management Plan, Capehart, MCB Kaneohe, Kaneohe, HI</i> . Prepared by Department of the Navy, Navy PWC, Energy and Environmental Engineering Branch, Norfolk, VA. April 1997.
20	DoN 1997, <i>Lead Management Plan, Ulupau, MCB Kaneohe, Kaneohe, HI</i> . Prepared by Department of the Navy, Navy PWC, Energy and Environmental Engineering Branch, Norfolk, VA. April 1997.
21	DoN 1996, <i>Lead Management Plan, Kaneohe Playgrounds, MCB Kaneohe, Kaneohe, HI</i> . Prepared by Department of the Navy, Navy PWC, Energy and Environmental Engineering Branch, Norfolk, VA. November 1996.
22	DoN. 2007. <i>FINAL Lead Survey Report/Lead Risk Assessment Report, Mololani Housing Area, Marine Corps Base Hawaii, MCBH Kaneohe Bay, Hawaii</i> . Prepared for NAVFAC PACIFIC. Prepared by Environmental Science International, Inc., July 2007.
23	DoN. 2007. <i>FINAL Lead Survey Report/Lead Risk Assessment Report, Ulupau Housing Area, Marine Corps Base Hawaii, MCBH Kaneohe Bay, Hawaii</i> . Prepared for NAVFAC PACIFIC. Prepared by Environmental Science International, Inc., July 2007.
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26	Kauai Environmental, Inc. 2005. <i>Results of Initial Chlordane Soil Sampling, Replacement of 212 Family Housing Quarters, Marine Corp Base Hawaii, Kaneohe, Hawaii</i> . Letter to Metcalf Construction Company, Inc. from Kauai Environmental, Inc. 5 August 2005. White Environmental Consultants, Inc. 2005. <i>H-563 Replacement Housing KMCBH – Chlordane Testing, Pond Circle Unit 2286 & 2288</i> . Letter to Bauske Environmental from White Environmental Consultants, Inc. 28 February 2005.
27	R.M. Towill Corporation. 1953, 1955, 1968, 1969, 1990, 1991, 1992, 1998 and 1999, Aerial Photographs of MCBH Kaneohe Bay.
28	DoN. 1989. <i>Site Inspection, Quarry Pit Landfill, Marine Corps Air Station, Kaneohe Bay, Hawaii</i> . Prepared for NAVFAC PACIFIC. Prepared by Harding Lawson Associates. 20 September 1989.
29	DoN 1993. <i>SI Report for Building 454 Disposal Area, Marine Corps Air Station Kaneohe Bay, Kaneohe, Hawaii</i> . Prepared for NAVFAC PACIFIC. Prepared by from Ogden. November 1993.
30	USACE. 2001. <i>Range Identification and Preliminary Range Assessment, Marine Corps Base Hawaii and Associated Sites, Oahu, Hawaii</i> . Prepared for USACE. Prepared by USACE ST. Louis District. December 2001.

REFERENCE FORM 1

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *Environmental Baseline Survey to Support the Utility Privatization of Marine Corps Base Hawaii's Electrical Distribution and Wastewater Systems, MCBH Kaneohe Bay and Building 700 at MCBH Bellows, Oahu, Hawaii.* Prepared for NAVFAC PACIFIC. Prepared by Environet, Inc. May 2005.

Pages Viewed: Executive Summary and Table 4-4 PCB Soil and Wipe Sample Results (see attached)

Sections 3.0 (Physical Settings) and 4.0 (Land Use and Finding), and Appendices A (Reference Documentation), D(Records of Discussion), E (Site Reconnaissance Field Notes) (copies not included due to length of document, the reader is referred to the actual document)

Date Viewed: February – April 2006

Results: Baseline of findings for the MCBH Kaneohe Bay was established. Site settings and historical land use for MCBH Kaneohe Bay was obtained. PCB sampling data of transformers installed on or prior to 1979 was obtained.

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Final Environmental Baseline Survey to Support the Utility Privatization of Marine Corps Base Hawaii's Electrical Distribution and Wastewater Systems MCBH KANEOHE BAY AND BUILDING 700 AT MCBH BELLOWS, OAHU, HAWAII

May 2005

Prepared for:



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Prepared under:

**Environmental Engineering Services
Contract Number N62472-02-D-1801, CTO 0022**

EXECUTIVE SUMMARY

The United States (U.S.) Department of the Navy (DoN), Naval Facilities Engineering Command, Pacific (NAVFAC PACIFIC) requested the performance of this Environmental Baseline Survey (EBS) to facilitate the utilities privatization (UP) of the electrical distribution and wastewater systems at the Marine Corps Base Hawaii (MCBH) Kaneohe Bay and wastewater system at Building 700 at MCBH Bellows, Waimanalo, Oahu, Hawaii to a private entity. The purpose of an EBS is to provide an evaluation of existing environmental conditions for real property locations. An EBS gathers sufficient data to: (1) document existing environmental conditions of the survey area, (2) identify areas of potential environmental concern, and (3) classify the survey area based on its environmental condition. NAVFAC PACIFIC requested the performance of this EBS to facilitate the right of access of the Class I Property (the land) and ownership transfer of the Class II Property (the facilities and equipment) of the electrical distribution and wastewater systems located on the U.S. Marine Corps (USMC)-owned real property located at MCBH Kaneohe Bay and the wastewater system at Building 700, MCBH Bellows.

The EBS study area, hereinafter known as the Subject Property, consists of the following Class I (land) and Class II Property (facilities, equipment, structures):

1. The land through which the MCBH Kaneohe Bay electrical distribution and wastewater system equipment and facilities and Building 700 wastewater system at MCBH Bellows are located is hereafter referred to as the Class I Property.
2. The MCBH Kaneohe Bay electrical distribution system is comprised of 52 miles of overhead and underground lines and includes electrical substations as well as pad and pole mounted transformers. This Class II Property is hereinafter referred to as the MCBH Kaneohe Bay electrical distribution system facilities and equipment.
3. The MCBH Kaneohe Bay wastewater system consists of an extensive wastewater collection system dispersed throughout MCBH Kaneohe Bay which delivers the collected wastewater to the wastewater reclamation facility (WRF) for secondary treatment. The MCBH Kaneohe Bay wastewater system includes approximately 30 miles of gravity sewer and force mains, 750 manholes, 19 pump (lift) stations, secondary treatment facility, reclaimed water pumps and transmissions mains, effluent pumps and transmission mains. This Class II Property is hereinafter referred to as the MCBH Kaneohe Bay wastewater system facilities and equipment.
4. The wastewater system at Building 700 at MCBH Bellows consists of two injection wells and a septic tank. This Class II Property is hereinafter referred to as the Building 700, MCBH Bellows wastewater system equipment.

The EBS examined the following potential environmental conditions: aboveground and underground storage tanks (ASTs/USTs) and petroleum-related structures (AUP); asbestos-containing materials (ACM); hazardous substances; heavy metals; landfills; lead-based paint (LBP); medical/biohazardous waste (MW/BW); mixed waste; ordnance/unexploded ordnance (UXO); operationally contaminated/ Installation Restoration (IR) Program sites; pesticides/herbicides; polychlorinated biphenyls (PCBs); potable water; radioactive material; radon; wastewater and storm water (WW/SW); and other environmental concerns.

The EBS found no indication of current environmental conditions on MCBH Kaneohe Bay that would affect human health, the environment, and/or the future use of the Subject Property by a private entity for use as an electrical distribution and wastewater system with the exception of the following areas of environmental concern:

1. Class I Property (the land) at MCBH Kaneohe Bay. The Class I Property (the land) is classified as generally belonging to Category 1 (areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas). The few sites within MCBH Kaneohe that were found to contain AUP, hazardous substances, heavy metals, IR Program sites, and PCB sites that require further evaluation or additional response are described below:

- **AUP:** UST sites KB6D (Category 2c), KB8 through KB11 (Category 2c), KB18 (Category 2c), KB25 (Category 2c), KB75 through KB78 (Category 2c), KB91 (Category 2c), and KB100 (Category 2c), are located on or in close proximity to the Subject Property and are considered a finding of concern for the Class I Property. Their locations are shown on Figure ES-1.

- **Hazardous Substances, Heavy Metals, and IR Program Sites:** There are eight IR Program sites which could have hazardous materials and heavy metals that are located on or in close proximity to the Subject Property. (personal communication, Mr. Randall Hu, 2005). These sites are shown on Figure ES-1 and include: (1) Site 1 (H-3 Landfill, a Category 5 site); (2) Site 2 (Quarry Pit Landfill, a Category 5 site); (3) Site 9 (Building 375 Disposal Area, a Category 7 site); (4) Site 10 (Building 454 Disposal Area, a Category 5 site); (5) Site 11 (Pollock Field Oil Spill, a Category 2e site); (6) Site 21 (AST 1253, a Category 2c site); (7) Site 24 (Fuel Oil Pipelines, a Category 2e site); and (8) Site 25 (Liquid Oxygen [LOX] Facility Building 1183, a Category 2c site). These eight sites are considered findings of concern for the Class I Property. In addition, there are 15 Category 7 (further evaluation is necessary) ordnance sites, located on or in close proximity to the Subject Property, that could have heavy metals. These sites are shown on Figure ES-1 and include: (1) Moving Target Range; (2) Skeet/Trap Range; (3) Flame Thrower Range; (4) Range 3 – Small Arms; (5) Range 1 – Known Distance; (6) Range 2 – Pistol; (7)

Range 4 – School Range; (8) Range 6 – FBI Range; (9) Rifle Grenade Range; (10) Hand Grenade Range (Combat); (11) Hand Grenade Range (Practice); (12) Combat Marksmanship Range; (13) Machine Gun Practice Range; (14) Skeet Range; and (15) Range 9-BZ0/Grouping. These 15 sites are considered findings of concern for the Class I Property and are shown on Figure ES-1.

- **Landfills:** The former H-3 Landfill (IR Program Site 1) and the Quarry Pit Landfill (IR Program Site 2) contain electrical distribution and wastewater system equipment and facilities and have been assigned an Environmental Condition of Property (ECP) of Category 5 (response actions have not been completed). These sites are considered findings of concern for the Class I Property and are shown on Figure ES-1.

- **PCBs:** There are 37 electrical transformer sites (includes 39 transformers, see Table ES-1 and Figure ES-1) which have been assigned a PCB ranking of Category 7 (further evaluation is necessary). These sites are findings of concern for the Class I Property for both the electrical distribution and wastewater systems and are shown on Figure ES-1.

- **Ordnance/UXO:** There are 15 ordnance sites that are located on or in close proximity to the Subject Property. (1) Moving Target Range; (2) Skeet/Trap Range; (3) Flame Thrower Range; (4) Range 3 – Small Arms; (5) Range 1 – Known Distance; (6) Range 2 – Pistol; (7) Range 4 – School Range; (8) Range 6 – FBI Range; (9) Rifle Grenade Range; (10) Hand Grenade Range (Combat); (11) Hand Grenade Range (Practice); (12) Combat Marksmanship Range; (13) Machine Gun Practice Range; (14) Skeet Range; and (15) Range 9-BZ0/Grouping. These sites are Category 7 sites (further evaluation is necessary), and their locations are shown on Figure ES-1. These 15 ordnance sites are findings of concern for the Class I Property.

- **Other On-Site Findings of Concern.** Natural and cultural resources exist at MCBH Kaneohe Bay. There are over 50 protected species of migratory or indigenous waterfowl that are found on MCBH Kaneohe Bay, including four listed endangered waterbirds: (1) Hawaiian stilt; (2) Hawaiian Gallinule; (3) Hawaiian Coot; and (4) Hawaiian (Koloa) Duck. They frequent Nu'upia Ponds, but also are seen in many of the scattered smaller delineated wetlands, including the one immediately adjacent the WRF facility (personal communication, (b) (6) 2005). These protected waterfowl are regular, daily visitors to the WRF where they feed on the insect larvae and other food sources found in the wastewater treatment process. In addition to avian species, there are at least 16 native species of aquatic life found in the Nu'upia Ponds (personal communication, (b) (6) 2005). Currently, MCBH Kaneohe Bay is in progress of updating their knowledge of marine resources found within the 500 yard security buffer zone around Mokapu peninsula with the help of an interagency team of marine biologists headed by the U.S. Fish and Wildlife Service. This team is verifying the presence of several species in MCBH

Kaneohe Bay waters (e.g., Green Turtles, Hawaiian Monk Seals, seasonal pass-through Humpback Whales) as well as other federally-protected marine mammals (e.g., dolphin spp.) (personal communication, (b) (6) 2005). This is an area of concern for the Subject Property (the land and structures) as coordination with personnel from MCBH Environmental Compliance and Protection Department (MECPD) will be necessary when working at the WRF and other areas frequented by endangered or protected species and when excavating on base.

Of the total 62 cultural resources identified at MCBH Kaneohe, one (Mokapu Burial Area – the dunes along North Beach) is listed in the National Register of Historic Places while 49 others are considered eligible for listing, including Nu'upia Ponds (USMC, 2001). Additionally, there are 343 pre-1952 military facilities at MCBH which are included in the MCBH Kaneohe Bay Historic Building Inventory (Fung Associates, 2005). In addition, human remains are found throughout the base inside sand-lined utility trenches and other areas and their locations cannot be reliably predicted. Prior to any ground disturbance on base, including excavation, construction, or demolition activities, a review of the proposed action by the MCBH Environmental Department must be completed (personal communication, (b) (6) 2005).

2. Class II Property (the facilities and equipment) at MCBH Kaneohe Bay: The Class II Property is classified, based on its environmental condition, as generally belonging to Category 1; however, the presence of ACM, LBP, and PCBs require special annotation as follows:

- **ACM:** Asbestos surveys have not been completed for the entire electrical distribution and wastewater system facilities or equipment. Therefore, the potential for ACM hazards exists and is considered a finding of concern for the Class II Property (electrical distribution and wastewater system facilities and equipment). The presence of ACM, however, does not impact the environmental condition of the property (i.e., the ECP of the Class II Property remains Category 1).
- **LBP:** Due to the age of some of the electrical distribution and wastewater system facilities, LBP may have been used to paint the interior and exterior painted surfaces. The DoN does not have LBP surveys for these facilities. Therefore, the potential for LBP hazard exists and is considered a finding of concern for the Class II Property (electrical distribution and wastewater system facilities and equipment) but does not impact the environmental condition of the property.
- **PCBs:** There are 37 electrical transformer sites (includes 39 transformers, see Table ES-1 and Figures ES-1) that have been assigned a PCB ranking of Category 7 (further evaluation is necessary). These sites are findings of concern for the Class II Property electrical distribution system facilities and equipment only and are shown on Figure ES-1.

Sites that are a finding of concern for the MCBH Kaneohe Bay Class I Property (the land) are shown on Figure ES-1, along with their corresponding ECP. Tables ES-1 and ES-2 list the Class II Property (the facilities and equipment) and show the corresponding ECP for each item. Table ES-1 lists the electrical distribution system facilities and equipment, and Table ES-2 lists the wastewater system facilities and equipment.

3. Class I Property (the Land) at Building 700, MCBH Bellows: The Class I Property is classified, based on its environmental condition, as generally belonging to Category 1; however, the presence of AUP, wastewater and other on site environmental concerns require special sites require special annotation as follows:

- **AUP:** According to (b) (6) of MECPD, there were USTs located inside of Building 701 (Generator Building). These tanks have been removed and no further action is required. However, according to (b) (6) one of the injection wells associated with the wastewater system at Building 701 has a petroleum odor associated with it. (b) (6) stated that the lines to the injection well were sealed and any contamination associated with the well is likely the result from past-practices. This site has been assigned a Category 2e (e.g. facilities which may have had a release of petroleum products, but have had no sampling or field screening and require such investigations to confirm that a release has or has not occurred). This is a finding of concern for the Class I Property at Building 700 and requires a notification in the FOS for the Subject Property.

In addition, a notation on a drawing showing the location of the wastewater equipment at Building 700 indicates that a "dust palliative" treatment was used in the location of the wastewater equipment at Building 700. This palliative (cure) could have been the application of waste oil (which can include heavy metals and PCBs) as a dust suppressant which was a past practice at military installations. This site has been assigned a Category 7 (further evaluation is necessary). This is a finding of concern for the Class I at Building 700. A notification will be made in the FOS for the Subject Property.

- **Wastewater:** Wastewater injection wells are located at Building 700. According to (b) (6) of MECPD, one of the wells has petroleum odor associated with it. This site has been assigned a Category 2e (e.g. facilities which may have had a release of petroleum products, but have had no sampling or field screening and require such investigations to confirm that a release has or has not occurred). This is a finding of concern for the Class I Property at Building 700 and requires a notification in the FOS for the Subject Property. These findings will be included as a notification in the FOS for the Subject Property.

- **Other On-Site Environmental Concerns:** Although there are several jurisdictional wetlands and threatened and endangered species found at MCBH Bellows, none of them are in the immediate vicinity

of Building 700 (personal communication, (b) (6) 2005). Coordination with government personnel on sensitive natural resources issues may be necessary during the operation, renovation, or demolition of the wastewater facilities at that site.

More than 17 archaeological studies have been carried out at Bellows and 19 individual resources have been identified including 12 Hawaiian pre-contact sites and seven historic WWII period sites. Building 700 is in the vicinity of Sites 4853 and 3312. These two sites are eligible for the National Register of Historic Places. Building 700 is directly within the boundaries of Site 4853, a Native Hawaiian site yielding a date of A.D. 380-660. Site 3312 is a historic grave complex located approximately 400 feet west of Building 700. A notification will be made in the FOS for the Subject Property.

4. Class II Property (facilities and equipment) at Building 700 at MCBH Bellows

- **ACM:** Asbestos surveys for the wastewater system facilities or equipment have not been completed. Therefore, the potential for ACM hazards exists and is considered a finding of concern for the Class II Property (facilities and equipment). These findings will be included as a notification in the FOS for the Subject Property.

- **AUP:** According to (b) (6) of MECPD, there were USTs located inside of Building 701 (Generator Building). These tanks have been removed and no further action is required. However, according to (b) (6) one of the injection wells associated with the wastewater system at Building 701 has a petroleum odor associated with it. (b) (6) stated that the lines to the injection well were sealed and any contamination associated with the well is likely the result from past-practices. This site has been assigned a Category 2e (e.g. facilities which may have had a release of petroleum products, but have had no sampling or field screening and require such investigations to confirm that a release has or has not occurred). This is a finding of concern for the Class II Property at Building 700 and requires a notification in the FOS for the Subject Property.

- **LBP:** Due to the age of wastewater system equipment, LBP may have been used on the painted surfaces. The DoN does not have LBP surveys for these facilities. Therefore, the potential for LBP hazards exists and is considered a finding of concern. Since LBP hazards are not regulated under CERCLA, no ECP category is assigned to LBP hazards; however, they are addressed in this EBS for disclosure purposes. These findings will be included as a notification in the FOS for the Subject Property.

- **Wastewater:** Wastewater injection wells are located at Building 700. According to (b) (6) of MECPD, one of the wells has petroleum odor associated with it. This site has been assigned a Category 2e (e.g. facilities which may have had a release of petroleum products, but have had no sampling or field screening and require such investigations to confirm that a release has or has not

occurred). This is a finding of concern for the Class II Property at Building 700 and requires a notification in the FOS for the Subject Property.

Sites that are a finding of concern for the Building 700, MCBH Bellows Class I Property (the land) are shown on Figure ES-2, along with their corresponding ECP. Table ES-2 provides the ECP for Class II Property at Building 700 MCBH Bellows.

Table 4-4
Preliminary Laboratory Data
PCB Soil and Wipe Samples, MCBH UP EBS

Updated: 03 February 2005

Site	Sample ID	Sample Date	Units	PCB Analysis Results											
				Aroclor-1016		Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254	
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
102	104020.W46	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
102	104020.W47	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
102	104020.W48	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
102	104020.W49	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
103	104020.W44	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
103	104020.W45	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
103	104020.S36	11-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22
103	104020.S37	11-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23
104	104020.W42	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
104	104020.W43	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
104	104020.S34	11-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22
104	104020.S35	11-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22
204	104020.W118	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
204	104020.W119	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
204	104020.W120	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
204	104020.W121	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
208	104020.W114	26-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
208	104020.W115	26-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
208	104020.W116	26-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
208	104020.W117	26-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
222	104020.W18	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
222	104020.W19	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
222	104020.S18	11-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	ND	24
222	104020.S19	11-Jan-05	µg/kg	ND	25	ND	25	ND	25	ND	25	ND	25	ND	25

Table 4-4
Preliminary Laboratory Data
PCB Soil and Wipe Samples, MCBH UP EBS

Site	Sample ID	Sample Date	Units	PCB Analysis Results											
				Aroclor-1016		Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254	
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
227	104020.W12	07-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
227	104020.W13	07-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
227	104020.W14	07-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
227	104020.W15	07-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
227	104020.S12	07-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	190	22
227	104020.S13	07-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23
227	104020.S14	07-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	120	21
227	104020.S15	07-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	190	21
236	104020.W50	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
236	104020.W51	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
236	104020.W52	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
236	104020.W53	11-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
250	104020.W141	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
250	104020.W142	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
250	104020.W143	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
250	104020.W144	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
250	104020.W145	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
250	104020.W146	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	1.9J	2.5
252	104020.W16	07-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
252	104020.W17	07-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
252	104020.S16	07-Jan-05	µg/kg	ND	24	ND	24	ND	24	63	24	ND	24	40	24
252	104020.S17	07-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	46P	24
265	104020.W5	07-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
265	104020.W6	07-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
265	104020.S5	07-Jan-05	µg/kg	ND	19	ND	19	ND	19	ND	19	ND	19	ND	19
265	104020.S6	07-Jan-05	µg/kg	ND	20	ND	20	ND	20	ND	20	ND	20	40	20

Table 4-4
Preliminary Laboratory Data
PCB Soil and Wipe Samples, MCBH UP EBS

[illegible]

Table 4-4
Preliminary Laboratory Data
PCB Soil and Wipe Samples, MCBH UP EBS

Site	Sample ID	Sample Date	Units	PCB Analysis Results													
				Aroclor-1016		Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254		Aroclor-1260	
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
338	104020.W147	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
338	104020.W148	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
338	104020.W149	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
338	104020.S103	27-Jan-05	µg/kg	ND	20	ND	20	ND	20	ND	20	ND	20	ND	20	330DL	39
338	104020.S104	27-Jan-05	µg/kg	ND	19	ND	19	ND	19	ND	19	ND	19	ND	19	280	19
374	104020.W27	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
374	104020.W28	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
374	104020.W29	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	2.1J	2.5	ND	2.5
374	104020.W30	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
375	104020.W36	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
375	104020.W37	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
375	104020.W38	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
375	104020.W39	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
386	104020.W156	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	2.9	2.5
386	104020.W157	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
386	104020.W158	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
386	104020.W159	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	1000DL	130
390	104020.W54	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
390	104020.W55	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
390	104020.S38	11-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23	39	23
390	104020.S39	11-Jan-05	µg/kg	ND	28	ND	28	ND	28	ND	28	ND	28	ND	28	ND	28
505	104020.W24	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
505	104020.W25	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
505	104020.W26	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
505	104020.S24	11-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	ND	24	64P	24
505	104020.S25	11-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	ND	24	62P	24
505	104020.S26	11-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23
566	104020.W73	18-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
566	104020.W74	18-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
566	104020.W75	18-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
566	104020.W76	18-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5

Table 4-4
Preliminary Laboratory Data
PCB Soil and Wipe Samples, MCBH UP EBS

Site	Sample ID	Sample Date	Units	PCB Analysis Results													
				Aroclor-1016		Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254		Aroclor-1260	
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
588	104020.W70	13-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
588	104020.W71	13-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
588	104020.W72	13-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
588	104020.S57	13-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22
588	104020.S58	13-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21
588	104020.S59	13-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22	49	22
678	104020.W40	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
678	104020.W41	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
678	104020.S32	11-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	3500DL	630
678	104020.S33	11-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23	18000DL	2300
818	104020.W122	27-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
818	104020.W123	27-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
818	104020.S98	27-Jan-05	µg/kg	ND	20	ND	20	ND	20	ND	20	ND	20	ND	20	40	20
818	104020.S99	27-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	45	21
1122	104020.W61	13-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1122	104020.W62	13-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1122	104020.W63	13-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1122	104020.S44	13-Jan-05	µg/kg	ND	20	ND	20	ND	20	ND	20	ND	20	ND	20	64	20
1122	104020.S45	13-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	74	21
1122	104020.S46	13-Jan-05	µg/kg	ND	19	ND	19	ND	19	ND	19	ND	19	ND	19	130	19
1126	104020.W1	07-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1126	104020.W2	07-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1126	104020.S1	07-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22	9900DL	1100
1126	104020.S2	07-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23	15000DL	23000
1168	104020.W150	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	9.6	2.5
1168	104020.W151	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	3.1	2.5
1168	104020.W152	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	74000DL	25000
1168	104020.W153	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	140000DL	13000
1168	104020.W154	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	23000DL	2500
1168	104020.W155	28-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	300DL	130

Table 4-4
Preliminary Laboratory Data
PCB Soil and Wipe Samples, MCBH UP EBS

Site	Sample ID	Sample Date	Units	PCB Analysis Results													
				Aroclor-1016		Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254		Aroclor-1260	
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1175	104020.W33	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1175	104020.W34	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1175	104020.W35	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1175	104020.S29	11-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21
1175	104020.S30	11-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21
1175	104020.S31	11-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	37P	21
1178	104020.W31	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1178	104020.W32	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1178	104020.S27	11-Jan-05	µg/kg	ND	20	ND	20	ND	20	ND	20	ND	20	ND	20	94P	20
1178	104020.S28	11-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	170P	21
1249	104020.W92	19-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1249	104020.W93	19-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1249	104020.W94	19-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1249	104020.S77	19-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	ND	24	ND	24
1249	104020.S78	19-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21
1249	104020.S79	19-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21
1255	104020.W9	07-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1255	104020.W10	07-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1255	104020.W11	07-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1255	104020.S9	07-Jan-05	µg/kg	ND	20	ND	20	ND	20	ND	20	ND	20	ND	20	590DL	98
1255	104020.S10	07-Jan-05	µg/kg	ND	20	ND	20	ND	20	ND	20	ND	20	ND	20	5800DL	800
1255	104020.S11	07-Jan-05	µg/kg	ND	20	ND	20	ND	20	ND	20	ND	20	ND	20	4900DL	800
1274	104020.W56	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1274	104020.W57	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1274	104020.W58	11-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1274	104020.S40	11-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23	50	23
1274	104020.S41	11-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23	38	23
1634	104020.W59	13-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1634	104020.W60	13-Jan-05	µg/100cm²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1634	104020.S42	13-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21
1634	104020.S43	13-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23

Table 4-4
Preliminary Laboratory Data
PCB Soil and Wipe Samples, MCBH UP EBS

Site	Sample ID	Sample Date	Units	PCB Analysis Results											
				Aroclor-1016		Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254	
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1666	104020.W139	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1666	104020.W140	27-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1666	104020.S101	27-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21
1666	104020.S102	27-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	13J	22
1675	104020.W64	13-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1675	104020.W65	13-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
1675	104020.S47	13-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21
1675	104020.S48	13-Jan-05	µg/kg	ND	19	ND	19	ND	19	ND	19	ND	19	24	19
3001	104020.W161	28-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
3001	104020.W162	28-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
3001	104020.W163	28-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
3001	104020.W164	28-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
3006	104020.W7	07-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
3006	104020.W8	07-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
3006	104020.S7	07-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22
3006	104020.S8	07-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	17J	23
3097	104020.W66	13-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
3097	104020.W67	13-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
3097	104020.W68	13-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
3097	104020.W69	13-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
C29	104020.S49	13-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23
C29	104020.S50	13-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22
C29	104020.S51	13-Jan-05	µg/kg	ND	21	ND	21	ND	21	ND	21	ND	21	ND	21
C29	104020.S52	13-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23
H32	104020.S53	13-Jan-05	µg/kg	ND	25	ND	25	ND	25	ND	25	ND	25	ND	25
H32	104020.S54	13-Jan-05	µg/kg	ND	30	ND	30	ND	30	ND	30	ND	30	ND	30
H32	104020.S55	13-Jan-05	µg/kg	ND	26	ND	26	ND	26	ND	26	ND	26	ND	26
H32	104020.S56	13-Jan-05	µg/kg	ND	27	ND	27	ND	27	ND	27	ND	27	ND	27
T-6	104020.W110	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
T-6	104020.W111	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
T-6	104020.S95	19-Jan-05	µg/kg	ND	25	ND	25	ND	25	ND	25	ND	25	ND	25
T-6	104020.S96	19-Jan-05	µg/kg	ND	25	ND	25	ND	25	ND	25	ND	25	ND	25

Table 4-4
Preliminary Laboratory Data
PCB Soil and Wipe Samples, MCBH UP EBS

Site	Sample ID	Sample Date	Units	PCB Analysis Results											
				Aroclor-1016		Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254	
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
T-7	104020.W108	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
T-7	104020.W109	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
T-7	104020.S93	19-Jan-05	µg/kg	ND	25	ND	25	ND	25	ND	25	ND	25	ND	25
T-7	104020.S94	19-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23
T-12	104020.W106	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
T-12	104020.W107	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
T-12	104020.S91	19-Jan-05	µg/kg	ND	29	ND	29	ND	29	ND	29	ND	29	ND	29
T-12	104020.S92	19-Jan-05	µg/kg	ND	27	ND	27	ND	27	ND	27	ND	27	ND	27
TV5	104020.W86	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV5	104020.W87	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV5	104020.S69	18-Jan-05	µg/kg	ND	28	ND	28	ND	28	ND	28	ND	28	ND	28
TV5	104020.S70	18-Jan-05	µg/kg	ND	27	ND	27	ND	27	ND	27	ND	27	ND	27
TV6	104020.W83	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV6	104020.W84	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV6	104020.W85	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV6	104020.S66	18-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22
TV6	104020.S67	18-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22
TV6	104020.S68	18-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	ND	24
TV9	104020.W81	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV9	104020.W82	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV9	104020.S64	18-Jan-05	µg/kg	ND	26	ND	26	ND	26	ND	26	ND	26	ND	26
TV9	104020.S65	18-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	ND	24
TV10	104020.W79	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV10	104020.W80	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV10	104020.S62	18-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	ND	24
TV10	104020.S63	18-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	ND	22
TV11	104020.W77	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV11	104020.W78	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV11	104020.S60	18-Jan-05	µg/kg	ND	25	ND	25	ND	25	ND	25	ND	25	ND	25
TV11	104020.S61	18-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23

Table 4-4
Preliminary Laboratory Data
PCB Soil and Wipe Samples, MCBH UP EBS

Site	Sample ID	Sample Date	Units	PCB Analysis Results											
				Aroclor-1016		Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254	
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
TV14	104020.W103	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV14	104020.W104	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV14	104020.W105	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV14	104020.S88	19-Jan-05	µg/kg	ND	25	ND	25	ND	25	ND	25	ND	25	ND	25
TV14	104020.S89	19-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	ND	24
TV14	104020.S90	19-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	ND	24
TV16	104020.W101	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV16	104020.W102	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV16	104020.S86	19-Jan-05	µg/kg	ND	25	ND	25	ND	25	ND	25	180	25	ND	25
TV16	104020.S87	19-Jan-05	µg/kg	ND	25	ND	25	ND	25	ND	25	ND	25	ND	25
TV18	104020.W99	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV18	104020.W100	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV18	104020.S84	19-Jan-05	µg/kg	ND	24	ND	24	ND	24	ND	24	ND	24	34	24
TV18	104020.S85	19-Jan-05	µg/kg	ND	25	ND	25	ND	25	ND	25	ND	25	16JP	25
TV19	104020.W95	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV19	104020.W96	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV19	104020.S80	19-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	18J	23
TV19	104020.S81	19-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	33	23
TV20	104020.W97	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV20	104020.W98	19-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV20	104020.S82	19-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	23P	22
TV20	104020.S83	19-Jan-05	µg/kg	ND	22	ND	22	ND	22	ND	22	ND	22	25	22
TV22	104020.W88	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV22	104020.W89	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV22	104020.S71	18-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	47P	23
TV22	104020.S72	18-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	35	23
TV30	104020.W90	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV30	104020.W91	18-Jan-05	µg/100cm ²	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5	ND	2.5
TV30	104020.S73	18-Jan-05	µg/kg	ND	27	ND	27	ND	27	ND	27	ND	27	54	27
TV30	104020.S74	18-Jan-05	µg/kg	ND	23	ND	23	ND	23	ND	23	ND	23	ND	23

Table 4-4
Preliminary Laboratory Data
PCB Soil and Wipe Samples, MCBH UP EBS

Site	Sample ID	Sample Date	Units	PCB Analysis Results									
				Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260			
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL

Organic Analysis:

B - When used in relation to organics fractions, the "B" flag indicates that the analyte of interest was detected in the method blank associated with the sample, as well as in the sample itself. The "B" flag is applied without regard to the relative concentrations detected in the blank and sample.

J - The analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

T - The flagged values represent the SUM of two co-eluting compounds. The SUM of these two values is shown as though it were a result for each of them. The two figures should not be added together.

E - The flagged value was reported from an analysis that exceeded the linear range of the instrument. See additional comments for further discussion of the circumstances. Values so flagged should be considered estimates.

D - The value reported derives from analysis of a diluted sample of the sample extract.

P - When a dual column GC technique is employed, this flag indicates that test results from the two columns differ by more than 25%. Generally, we report the higher value.

C - The flagged analyte has been confirmed by GC/MS analysis. The value reported may be derived from either the initial of confirmatory (GC/MS) analysis. See specific report comments for details.

REFERENCE FORM 2

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *Environmental Assessment, Hawaii PPV Housing Phase II, Marine Corps Base Hawaii*. Prepared by NAVFAC Hawaii. 5 May 2006.

Pages Viewed: Cover Page and Executive Summary)

Date Viewed: April 2007

Results: Affected environment was reviewed and incorporated into the findings of the ECP.

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ENVIRONMENTAL ASSESSMENT

Hawaii PPV Housing Phase 2 Marine Corps Base Hawaii

Naval Facilities Engineering Command Hawaii
5 MAY 2006

**DEPARTMENT OF DEFENSE
UNITED STATES MARINE CORPS**

**FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR ENVIRONMENTAL ASSESSMENT (EA)
FOR HAWAII PPV HOUSING PHASE 2, MARINE CORPS BASE HAWAII**

Pursuant to the Council on Environmental Quality (40 Code of Federal Regulations, Parts 1500-1508) implementing the National Environmental Policy Act of 1969 and Marine Corps Order (MCO) P5090.2A, the U.S. Marine Corps gives notice that an EA has been prepared and an Environmental Impact Statement is not required for the Hawaii PPV Housing Phase 2, Marine Corps Base Hawaii (MCBH).

Proposed Action: MCBH proposes to enter into a Public/Private Venture (PPV) (Hawaii PPV Housing Phase 2), effective until May 2054, to privatize a portion of MCBH family housing on O'ahu and address historic housing by renovating two of the 31 historic housing units which are eligible for listing on the National Register of Historic Places (NRHP) and demolishing and replacing the remaining 29 units.

The purpose of the action is to leverage private investment and private sector strategies by entering into a PPV to provide affordable, timely, and quality living accommodations for military service members and their families that enhance quality of life, morale, and retention. The need for the action is due to a shrinking housing budget coupled with aging houses and an increasing backlog of maintenance and repair activities which makes it challenging for the Marine Corps to quickly provide quality housing for service members and their families.

Existing Conditions: The project area includes up to 1,451 family housing units, with a construction laydown area, maintenance/warehouse areas and a paved beach access trail, on four MCBH installations (MCBH Kaneohe Bay, MCBH Camp H.M. Smith [Camp Smith], the MCBH Manana Family Housing Area, and Pearl City Annex). The housing units are located in 11 housing areas: nine at MCBH Kaneohe Bay (Heleloa [Hilltop], Kapoho [Hillside], Hawai'i Loa, Waikulu, Hana Like, Kaluapuni, Nani Ulupa'u, and portions of Ulupa'u and Pa Honua), the housing area at MCBH Camp Smith, and the MCBH Manana Family Housing Area. The 23 housing units in the Heleloa (Hilltop) housing area and eight housing units in Waikulu's NCO Row are eligible for listing in the National Register of Historic Places (NRHP). The Kapoho (Hillside) housing area, Waikulu's Manning Court, and the MCBH Manana Family Housing Area may also be eligible for listing on the NRHP, as they were built as part of the nationwide Wherry and Capehart era of military family housing. The warehouses at Pearl City Annex may be eligible for listing on the NRHP, for their role during World War II.

Alternatives Analyzed: Alternatives considered include the Proposed Action, the Additional Historic Housing Renovation Alternative, the Full Historic Housing Renovation Alternative, and the No Action Alternative. The Proposed Action would convey title of up to 1,451 family housing units, and lease the associated land, to a PPV entity effective until May 2054, and would involve a combination of demolition and replacement, renovation, and maintenance of military family housing. In accordance with the Programmatic Agreement resulting from the National Historic Preservation Act (NHPA) Section 106 consultation process, 29 historic housing units in the Heleloa (Hilltop) housing area and Waikulu's NCO Row of MCBH Kaneohe Bay would be demolished and replaced, and two units in the Heleloa (Hilltop) area would be renovated. The Additional Historic Housing Renovation Alternative would be identical to the Proposed Action, but a greater number of historic housing units would be renovated in the Heleloa (Hilltop) area. Under the Full Historic Housing Renovation Alternative, all 31 historic housing units in the Heleloa (Hilltop) and the Waikulu NCO Row housing areas would be renovated. The No Action Alternative would be similar to the action alternatives, such that housing would eventually be demolished and replaced, or renovated, but MCBH would not

enter into a PPV and would continue managing housing areas using traditional military construction procedures.

Environmental Effects: The Proposed Action may have an adverse effect on 31 historic housing units, due to the proposed renovation of two units and the demolition of the 29 remaining units, and archaeological sites due to construction, repair, or maintenance activities. MCBH has complied with Section 106 of the NHPA by consulting with the Advisory Council on Historic Preservation, the State Historic Preservation Officer, the Historic Hawai'i Foundation, the National Trust for Historic Preservation, the Office of Hawaiian Affairs, and the Oahu Council of Hawaiian Civic Clubs, and other Native Hawaiian organizations. Consultations under Section 106 of the NHPA will conclude with the execution of a Programmatic Agreement, which stipulates ways to minimize and mitigate the adverse effect on historic properties. Impacts from the two action alternatives would be less than the Proposed Action, as fewer historic housing units would be demolished.

The Proposed Action and action alternatives would have no significant impacts on natural resources, infrastructure, public health and safety, socio-economics/demographics, or public services. Implementation of the Proposed Action or action alternatives would not create environmental health or safety risks that may disproportionately affect children or minority or low-income populations. MCBH has determined that the Proposed Action and action alternatives would have no effect on Federal-listed threatened or endangered species and would not have reasonably foreseeable direct or indirect effects on any use or resource in the coastal zone.

Finding: Based on information gathered during preparation of the EA, MCBH finds that the proposed Hawaii PPV Housing Phase 2, Marine Corps Base Hawaii will not significantly impact human health or the environment.

The EA addressing this action is on file and interested parties may obtain a copy from: Naval Facilities Engineering Command Pacific, 258 Makalapa Drive, Suite 100, Pearl Harbor, Hawai'i 96860-3134 (Attention: (b) (6)), telephone (b) (6). A limited number of copies on compact disk are available to fill single copy requests.

28 Jan 06

Date

(b) (6)

Brigadier General, U.S. Marine Corps
Commanding General, Marine Corps Base Hawaii

COVER SHEET

Proposed Action: Enter into a Public/Private Venture (PPV), effective until May 2054, that would privatize a portion of Marine Corps Base Hawaii (MCBH) family housing on O'ahu, and address historic housing by renovating two of the historic housing units and demolishing and replacing the remaining 29 units.

Type of Document: Environmental Assessment (EA)

Lead agency: Marine Corps Base Hawaii (MCBH)

For further information: (b) (6) Naval Facilities Engineering Command Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, Hawaii 96860-3134
Phone 808-472-1396

This Environmental Assessment was prepared in accordance with the National Environmental Policy Act of 1969 (42 United States Code §4321, et seq.) as implemented by the Council on Environmental Quality regulations (40 Code of Federal Regulations §1500-1508) and Marine Corps Order (MCO) P5090.2A, Environmental Compliance and Protection Manual, dated 10 July 1998.

The purpose of the action is to leverage private investment and private sector strategies by entering into a PPV to provide quality living accommodations to MCBH families that enhances quality of life, morale, and retention. The action is needed due to a shrinking housing budget coupled with aging houses and an increasing backlog of maintenance and repair activities which makes it challenging for the Marine Corps to quickly provide quality housing for service members and their families.

The project area includes up to 1,451 family housing units, with a construction laydown area, maintenance/warehouse areas and a paved beach access trail, on four MCBH installations (MCBH Kaneohe Bay, MCBH Camp H.M. Smith [Camp Smith], the MCBH Manana Family Housing Area, and Pearl City Annex). The housing units are located in 11 housing areas: nine at MCBH Kaneohe Bay (Heleloa [Hilltop], Kapoho [Hillside], Hawai'i Loa, Waikulu, Hana Like, Kaluapuni, Nani Ulupa'u, and portions of Ulupa'u and Pa Honua), the housing area at MCBH Camp Smith, and the MCBH Manana Family Housing Area. The 23 housing units in the Heleloa (Hilltop) housing area and eight housing units in Waikulu's NCO Row are eligible for listing in the National Register of Historic Places (NRHP). The Kapoho (Hillside) housing area, Waikulu's Manning Court, and the MCBH Manana Family Housing Area may also be eligible for listing on the NRHP, as they were built as part of the nationwide Wherry and Capehart era of military family housing. The warehouses at Pearl City Annex may be eligible for listing on the NRHP, for their role during World War II.

Alternatives considered include the Proposed Action, the Additional Historic Housing Renovation Alternative, the Full Historic Housing Renovation Alternative, and the No Action Alternative. The Proposed Action would convey title of up to 1,451 family housing units, and lease the associated land, to a PPV entity effective until May 2054, and would involve a combination of demolition and replacement, renovation, and maintenance of military family housing. In accordance with the Programmatic Agreement resulting from the National Historic Preservation Act (NHPA) Section 106 consultation process, 29 historic housing units in the Heleloa (Hilltop) housing area and Waikulu's NCO Row of MCBH Kaneohe Bay would be demolished and replaced, and two units in the Heleloa (Hilltop) area would be renovated. The Additional Historic Housing Renovation Alternative would be identical to the Proposed Action, but a greater number of historic housing units would be renovated in the Heleloa (Hilltop) area. Under the Full Historic Housing Renovation Alternative, all 31 historic housing units in the Heleloa (Hilltop) and the Waikulu NCO Row housing areas would be renovated. The No Action Alternative would be similar to the action alternatives, such that housing would eventually be demolished and replaced, or renovated, but MCBH would not enter into a PPV and would continue managing housing areas using traditional military construction procedures.

The Proposed Action may have an adverse effect on 31 historic housing units, due to the proposed renovation of two units and the demolition of the 29 remaining units, and archaeological sites due to construction, repair, or maintenance activities. MCBH has complied with Section 106 of the NHPA by consulting with the Advisory Council on Historic Preservation, the State Historic Preservation Officer, the Historic Hawai'i Foundation, the National Trust for Historic Preservation, the Office of Hawaiian Affairs, and the Oahu Council of Hawaiian Civic Clubs, and other Native Hawaiian organizations. Consultations under Section 106 of the NHPA will conclude with the execution of a Programmatic Agreement, which stipulates ways to minimize and mitigate the adverse effect on historic properties. Impacts from the two action alternatives would be less than the Proposed Action, as fewer historic housing units would be demolished.

The Proposed Action and action alternatives would have no significant impacts on natural resources, infrastructure, public health and safety, socio-economics/demographics, or public services. Implementation of the Proposed Action or action alternatives would not create environmental health or safety risks that may disproportionately affect children or minority or low-income populations. MCBH has determined that the Proposed Action and action alternatives would have no effect on Federal-listed threatened or endangered species and would not have reasonably foreseeable direct or indirect effects on any use or resource in the coastal zone.

REFERENCE FORM 3

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *Environmental Baseline Survey for Public Private Venture, Various Marine Corps Base Hawaii Housing Areas: Kaneohe, Camp H.M. Smith, and Manana, Oahu Hawaii.* Prepared for NAVFAC PACIFIC. Prepared by Environmental Science International, Inc. August 2006.

Pages Viewed: Entire Document (see attached Cover pages and Executive Summary)

Date Viewed: April 2007

Results: Information reviewed and incorporated in ECP.

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**Environmental Baseline Survey for
Public Private Venture
Various Marine Corps Base Hawaii
Housing Areas: Kaneohe,
Camp H.M. Smith and Manana
OAHU, HAWAII**

August 2006

**Department of the Navy
Commander, Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, HI 96860-3134**



Contract Number N62742-04-D-1859, CTO 0015

EXECUTIVE SUMMARY

The United States (U.S.) Department of the Navy (DoN), Naval Facilities Engineering Command, Pacific (NAVFAC PACIFIC) requested the performance of this Environmental Baseline Survey (EBS) to facilitate the housing public-private venture (PPV) between the DoN and “best qualified” developer. The EBS study area consists of nine U.S. Marine Corps (USMC) neighborhoods within the Marine Corps Base Hawaii (MCBH) Kaneohe Bay, one USMC neighborhood within MCBH Camp H.M. Smith (Camp Smith), and one USMC neighborhood within the MCBH Manana Family Housing Area (Manana). The purpose of an EBS is to provide an evaluation of existing environmental conditions for real property locations. An EBS gathers sufficient data to: (1) document existing environmental conditions of the survey area, (2) identify areas of potential environmental concern, and (3) classify the survey area based on its environmental condition. In this case, the EBS was conducted to facilitate the lease of the land on which the housing units are located (Class I Property) and to facilitate the ownership transfer of the housing units and ancillary facilities (Class II Property).

The EBS study area, hereinafter known as the Subject Property, consists of the following Class I (land) and Class II Property (improvements) located throughout the following neighborhoods (Figure ES-1):

1. Heleloa Hilltop (MCBH Kaneohe)
2. Kapoho Hillside (MCBH Kaneohe)
3. Hawaii Loa (MCBH Kaneohe).
4. Waikulu (MCBH Kaneohe)
5. Hana Like (MCBH Kaneohe)
6. Kaluapuni (MCBH Kaneohe)
7. Nani Ulupau (MCBH Kaneohe)
8. Ulupau, portion of (MCBH Kaneohe)
9. Pa Honua, portion of (MCBH Kaneohe)
10. USMC Family Housing Camp Smith
11. USMC Family Housing Manana

The EBS examined the following potential environmental conditions: aboveground and underground storage tanks (ASTs/USTs) and petroleum-related structures (AUP); asbestos-containing materials (ACM); hazardous substances/hazardous materials/hazardous waste (HS/HM/HW); landfills; lead-based paint (LBP); medical/biohazardous waste (MW/BW); mixed waste; ordnance/unexploded ordnance (UXO); operationally contaminated/ Installation Restoration (IR) Program sites; pesticides/herbicides; polychlorinated biphenyls (PCBs); potable water; radioactive material; radon; wastewater and stormwater (WW/SW); natural resources; cultural resources and other environmental concerns.

The EBS found no indication of current environmental conditions on the Subject Property that would affect human health, the environment, and/or the future use of the Subject Property by a private entity for family housing with the exception of the following areas of environmental concern:

Class I Property (the land)

The Class I Property (the land) is classified as generally belonging to Category 1¹ (areas where no release or disposal of hazardous substances or petroleum products has occurred including no migration of these substances from adjacent areas). However, an isolated incidence of elevated lead in soil was found in a single unit (730 Elm Street) within the Manana neighborhood and a single unit within the FY 65 Pa Honua neighborhood. Therefore a ranking of Category 6 (required actions have not yet been implemented) has been assigned to these neighborhoods, however, it is only based on a single specific location within the respective community. Additionally, nine pad mounted electrical transformer sites located within the Waikulu – Rainbow sub-neighborhood were found to contain PCBs and require further investigation and have been assigned a ranking of Category 6 (required actions have not yet been implemented.).

There are two IR sites located adjacent to the Subject Property with hazardous waste concerns at which removal/remedial actions are underway or have been initiated but are not yet complete (Category 5). Additionally, two pad mounted electrical transformer sites located adjacent to the Subject Property which were found to contain PCBs and require further investigation and have been assigned a ranking of Category 6 (required actions have not yet been implemented.).

Additionally, there are several findings of concern that require notifications for the Class I Property (land) that are summarized below.

Lead in Soil. A single soil sample was identified within the Pa Honua FY65 housing area and in the Manana housing area. Each finding was considered an isolated instance within the respective community.

Pesticides/Herbicides. Pesticides/Herbicides may be present in the soil in all neighborhoods. These were legal applications and do not require remediation (Category 1); however, future construction that may disturb such soils may require environmental, as well as safety and health, controls.

Stormwater. One Hawaii Loa housing units (6372), and one Nani Ulupau housing unit (2686) have been impacted by erosion issues due to heavy rains. During storm events, soil carried by runoff is deposited around the units.

Other Environmental Concerns - Cultural and Natural Resources. All neighborhoods have concerns regarding landscaping or plant species alterations. Any changes must be approved by the Government and adhere to the MCBH Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA) and component Master Landscaping Guidelines published in 2002. Erosion control measures need to be addressed prior to any ground disturbance and the proposed action must be reviewed by the MCBH Environmental Department.

¹ Category 1 refers to the Environmental Condition of Property (ECP) designation and is explained in detail in Section 1.4 of this document.

The Hawaii Loa neighborhood had soil stabilization problems which caused problems after construction and required some residents to vacate buildings while stabilization buttressing work was done. Prior to any ground disturbance, proposed action must be reviewed by the MCBH Environmental Department.

Human remains have been encountered during previous construction at the Nani Ulupau neighborhood. Replacement construction is ongoing in Kaluapuni housing area. Grading and trenching have uncovered intact human burials.

The Hawaii Loa neighborhood borders the eastern half of Puu Hawaii Loa (a cinder cone) that has been identified as an area of high archaeological sensitivity because of the potential for presence of features such as caves/overhangs, walls, and others. In the 1930s, Site 368, a spring, was identified in the southeast section of the Hawaii Loa neighborhood. The location of this spring is in a developed area of the installation and has not been located since it was identified in the 1930s.

The southern edge of Pa Honua borders the Mokapu Peninsula Fishpond Complex, also known as Nuupia Pond. The site has been determined to be eligible for listing in the NRHP. Because of the presence of this site, the southern edge of the Pa Honua housing area is assessed to be within the high archaeological sensitivity zone in the MCBH Integrated Cultural Resources Management Plan (ICRMP) (DoN 2006a).

The two wetlands (Motor Pool Wetlands and the Nuupia Ponds Wetlands Area) are downstream of drainage from the Pa Honua area and are also frequented by endangered and protected species. Coordination with personnel from MCBH Environmental Compliance and Protection Department (MECPD) will be necessary when working at the neighborhood.

Class II Property (improvements)

The Class II Property (improvements) is classified, based on its environmental condition, as generally belonging to Category 1.

Additionally, there are several findings of concern that require notifications for the Class II Property (improvements) that are summarized below.

Asbestos-Containing Material (ACM). Previous asbestos surveys of the neighborhoods have identified the presence of ACM in the following neighborhoods: Heleloa Hilltop, Kapoho Hillside, Waikulu (NCO Row, Manning Court, and Rainbow), Ulupau, Pa Honua, Camp Smith, and Manana. In general, ACM may consists of the following: floor tiles and mastic; linoleum flooring and mastic; vinyl sheet flooring; base cove; sink undercoating; pipe insulation; duct insulation; pitch and gravel roofing; and roofing shingles and roofing felt.

In addition, demolition of similar military housing on Oahu has identified other ACM that may not be readily accessible or visible during a routine ACM survey (i.e. non-demolition survey). ACM that may also be present in the housing units include: roofing materials, asbestos concrete pipes, transite in housing walls, and asbestos coated pipes in concrete foundations. Therefore this also a finding of concern for the Hawaii Loa, Hana Like and Nani Ulupau housing areas.

Hazardous Substance/Hazardous Material/Hazardous Wastes. The housing units in Heleloa Hilltop, Kapoho Hillside, Waikulu (NCO Row, Manning Court), Camp Smith and Manana have canec ceilings and are known to potentially contain significant levels of arsenic. Lead and

mercury-containing fluorescent lamps and switches and ozone-depleting substance-containing appliances may also be present within the units in all housing areas except for Waikulu - Mokapu Court and Kaluapuni. Since these building materials are not regulated under CERCLA, no ECP category is assigned to these materials. However, these materials require proper handling and disposal during demolition and renovations, and they are addressed in this EBS for disclosure purposes.

Lead-Based Paint (LBP). The LBP survey of the neighborhoods completed in 2006 has identified the presence of LBP in houses in the Heleloa Hilltop, Kapoho Hillside, Waikulu (NCO Row, Manning Court, Rainbow), Ulupau, Camp Smith, and Manana housing areas. Lead is also considered a finding for Pa Honua housing area. Since LBP hazards are not regulated under CERCLA, no ECP category is assigned to LBP hazards; however, they are addressed in this EBS for disclosure purposes.

Pesticides/Herbicides. According to housing management, pesticides/herbicides have been legally applied to the interior of the homes at MCBH housing areas. Chlordane was used as an insecticide and may have been applied to attic spaces. This is a finding of concern requiring notification for the Class II (improvements) constructed prior to 1979 (Heleloa Hilltop, Kapoho Hillside, Waikulu [NCO Row, Manning Court, Rainbow], Ulupau, Camp Smith, and Manana).

Polychlorinated Biphenyls (PCBs). Fluorescent light ballasts that contain PCBs may be present within the housing units constructed prior to the ban on manufacturing in 1979 (Heleloa Hilltop, Kapoho Hillside, Waikulu [NCO Row, Manning Court, Rainbow], Ulupau, Camp Smith, and Manana). Since this building material is not regulated under CERCLA, no ECP category is assigned to this material. However, PCB containing light ballasts require proper handling and disposal during demolition and renovations, and they are addressed in this EBS for disclosure purposes.

Radon. Recent radon screening of 40 units in the Waikulu - Rainbow sub-neighborhood indicated radon levels below 4 picocuries per liter (pCi/L) with the exception of one housing unit (unit 2530A). Mitigation measures have been recommended by Oak Ridge National Laboratory (ORNL) for unit 2530A. In addition, ORNL has recommended further testing be conducted for the remaining 265 units in the Waikulu - Rainbow sub-neighborhood.

Recent radon screening of six of the eight units in the Waikulu - NCO Row sub-neighborhood indicated radon levels below 4 pCi/L. Further testing of the remaining two units (403A and 404A) in the NCO Row sub-neighborhood is recommended

Radon levels in the FY97 portion of the Pa Honua neighborhood housing areas readings were lower than EPA's action level of 4 pCi/L, however, they were higher than all other housing areas tested. Based on an evaluation of the radon results and geological considerations, further testing is recommended by ORNL for the 28 remaining housing units in the FY97 portion of the Pa Honua neighborhood.

Radon screening of the Hana Like, Waikulu - Mokapu Court, and Kaluapuni neighborhoods has not been performed. Radon assessment will need to follow the procedures outlined in the Radon Management Plan.

Stormwater. Three Waikulu - Rainbow housing units (2503, 2524, 2572), two Hawaii Loa housing units (6280, 6372), and one Nani Ulupau housing unit (2686) have been impacted by

heavy rains in the past. One Hawaii Loa housing units (6372), and one Nani Ulupau housing unit (2686) have been impacted by erosion issues due to heavy rains.

Other Environmental Concerns - Cultural Resources. The 23 housing units at Heleloa Hilltop and eight housing units at Waikulu - NCO Row are eligible for listing in the NRHP under Criterion C as properties embodying distinctive characteristics of single family housing construction during World War II. The Kapoho Hillside, Waikulu – Manning Court, and Manana neighborhoods were built as part of the nationwide Capehart - Wherry Military Family Housing Program. A Program Comment issued by the ACHP in 2004 suggests that Wherry and Capehart Era (1949-1962) family housing may be eligible for listing in the NRHP

A complete summary of the findings of concern requiring notification for the Subject Property along with the ECP category for each item is provided in Table ES-1. The locations of significant findings (Category 2 and higher) are shown on Figure ES-1.

REFERENCE FORM 4

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Environmental Compliance Protection Department

Document Reviewed: MCBH. 2006. *Environmental Assessment (EA) of the Integrated Cultural Resources Management Plan (ICRMP) for Marine Corps Base Hawaii (MCBH), Oahu, Hawaii*. Prepared for USACE. Prepared by Wil Chee – Planning and Environmental, Inc. May 2006.

Pages Viewed: Entire Document (See attached Cover Pages [preliminary document, reader referred to final version])

Date Viewed: April 2007

Results: Information reviewed and incorporated in ECP.

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Environmental Assessment (EA)
of the Integrated Cultural Resources Management Plan (ICRMP) for
Marine Corps Base Hawaii (MCBH)
Oahu, Hawaii

Prepared for:

Marine Corps Base Hawaii
Oahu, Hawaii

Commanding Officer
ATTN: LE (b) (6)
Box 63062 (Environmental)
MCBH Kaneohe Bay, HI 96863-3062
(808) 257-6920, ext. 254

Prepared by:
Wil Chee - Planning and Environmental, Inc.
1018 Palm Drive
Honolulu, HI 96814

May 11, 2006

Integrated Cultural Resources Management Plan (ICRMP) Marine Corps Base Hawaii (MCBH)



Prepared by:



Preliminary Final
May 2006

Integrated Cultural Resources Management Plan (ICRMP)
Marine Corps Base Hawaii
O‘ahu, Hawai‘i

Prepared for:
Installation Commander
Marine Corps Base Hawaii

Prepared by:
U.S. Army Corps of Engineers
Honolulu Engineer District

Project Team:
Contract No. DACA83-00-D-0012, T.O. 0007, 0030, 0042
Prime Contractor:
Wil Chee – Planning and Environmental, Inc.
Subcontractors:
Fung Associates (Historic Architecture)
Pacific Legacy, Inc. (Archaeology and Cultural Resources Management)

May 2006

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REFERENCE FORM 5

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Environmental Compliance Protection Department

Document Reviewed: United States Marine Corps (USMC). 2006. *Marine Corps Base Hawaii, Integrated Natural Resources Management Plan Update (MCBH INRMP/EA) (2007-2011). Prepared for: Marine Corps Base Hawaii.* Prepared by Environmental Compliance & Protection Department, Marine Corps Base Hawaii and Sustainable Resources Group International, Inc. November 2006.

Pages Viewed: Entire Document (See attached Executive Summary and Appendix D, Landscape Management Plan)

Date Viewed: May 2007

Results: Information reviewed and incorporated in ECP.

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FINAL

**MARINE CORPS BASE HAWAII
INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN UPDATE
(MCBH INRMP)**

(2007 – 2011)

**Marine Corps Base Hawaii
November 2006**



FINAL
MARINE CORPS BASE HAWAII
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN UPDATE
(MCBH INRMP)
(2007-2011)

Prepared for:

Marine Corps Base Hawaii

Prepared by:

Environmental Compliance & Protection Department, G4,
Marine Corps Base Hawaii
Box 63062, MCBH Kaneohe Bay, HI 96863-3062

and

Sustainable Resources Group Intn'l, Inc.
1916 Young Street, Suite 101, Honolulu, HI 96826

November 2006

(b) (6)



Colonel, U. S. Marine Corps
Deputy Commander, Marine Corps Base Hawaii

13 DEC 2006
Date

SECTION 1

PREFACE

Marine Corps Base Hawaii (MCBH) is a busy military installation with rich biological diversity and other unique natural resources; balancing combat readiness and conservation through a rigorously implemented Integrated Natural Resources Management Plan (INRMP).

MCBH's first 5-year \$8M plan (a combined plan and environmental assessment), covered the period 2002 – 2006. This document is an updated plan covering the same level of investment over the next five year time frame (2007-2011). Our INRMP is a “living” document, continuously improving with completion of each action, stakeholder input, environmental response evaluation, and annual progress review. This plan update documents progress made over the previous five years and additional management actions programmed over the next five years to continue this progress. It summarizes a broad array of management actions completed and planned, across seven component Course of Action categories: Fish and Wildlife, Wetland, Watershed, Coastal and Marine Resources, Grounds Maintenance and Landscape, Quality of Life/Outdoor Recreation/Outreach, and Resource Information Management.

While the increased tempo of military training since “9-11” (i.e., the September 11, 2001 terrorist attack) and changing environmental conditions (e.g., prolonged drought in 2003) have caused some shifts in project implementation sequence during the first five years of its implementation, MCBH's overall INRMP has thus far been adequately funded and implemented on time and within budget.

Favorable stakeholder review is reflected in MCBH having won the 2005 Department of Defense natural resources conservation award in the “small installations” program category, and 2001, 2003, and 2005 Secretary of Navy awards in the same category, as well as a 2005 individual Secretary of Navy award to MCBH's Senior Natural Resources Management Specialist – whose main responsibility is for INRMP development and implementation. Favorable regulator review is reflected in a June 28, 2005 US Fish and Wildlife Service letter MCBH received for “excellent progress” in INRMP implementation and for “thoughtful and creative approaches that have been built into INRMP project planning and execution at MCBH “that have...resulted in tangible benefits to Federal trust resources,” as well as a 2005 Certificate of Recognition from the Service received on May 12, 2006 for “outstanding efforts for natural resources conservation.” (See Appendices G-2 and G-3 for further details).

The types and levels of management actions in the original and updated INRMP show a strong supportive relationship among conservation, military training, and public interest objectives. This reflects Section 101(b)(1)(I) of the Federal Sikes Act which states that each INRMP shall provide for “no net loss in the capability of military installation lands to support the military mission of the installation.” 2006 US Marine Corps guidance on implementing INRMPs further states that “natural resources are not to be consumed by mission requirements, but sustained for mission requirements.” To achieve this, “environmental programs and policies must protect the environment for the mission.”

Finally, MCO P5090.2A, Section 11200.1 states a clear responsibility for Marine Corps installations to manage natural resources under their stewardship to support the military mission, while preserving, protecting and enhancing these resources for their “inherent values” and “to restore, improve, preserve and properly use” them “in the public interest.” MCBH looks forward to continuing to implement its exemplary INRMP implementation efforts in compliance with this guidance in the years to come. Preserving the environment through “continuing to implement MCBH's Integrated Natural Resources Management Plan” is a stated goal in MCBH's overall Strategic Plan and is part of MCBH's Vision to be the Base of Choice for the 21st Century, by integrating people, technology, and systems into a world class team that supports combat readiness, community relations, and resource management and leads the Department of Defense in quality, cost control, and customer satisfaction.”

SECTION 2 EXECUTIVE SUMMARY

PURPOSE

This updated Integrated Natural Resources Management Plan (INRMP) guides implementation of Marine Corps Base Hawaii's (MCBH) integrated natural resources management program on MCBH properties. It complies with the Sikes Act Improvement Amendments (SAIA) of 1997 which require all military installations with significant natural resources to prepare, implement, and regularly review/update INRMPs. These plans must support "no net loss" in capability of the installations' lands and waters to support military readiness while complying with a suite of Federal laws governing natural resources management and stewardship, and public access to the same, subject to safety, environmental and military security constraints (see Appendix A3).

This INRMP is an update of the original 2001 MCBH INRMP/EA (Environmental Assessment) (Drigot et al. 2001), rather than a revision. As documented herein, management actions programmed and described in this plan cover a five-year time frame (2007 – 2011) (see Table 2-1 and Appendix E3) and are very similar to the level and type of management actions described in the 2001 INRMP/EA, covering the preceding five years (2002 – 2006) (see Table ES-1 and Appendix C of the 2001 INRMP/EA for comparison). In fact, some recurring actions or later phases of projects started in the time frame of the 2001 INRMP/EA straddle the time frame of the updated INRMP and show sustained momentum of effort toward continuous improvement in the various management action categories covered. As required, and as has occurred in the previous five years, the updated INRMP implementation will be reviewed annually for progress and updated, as appropriate, no less than once every five years (see Appendix E2). The next INRMP review and update is programmed to take place in fiscal year (FY) 2010 (see Table 2-2).¹ The INRMP, and the continuing review and update process required of it, help ensure support of the US Marine Corps (USMC) and MCBH's mission and vision by helping to maintain quality training lands and quality of life for the affected military population. It also complies with Federal laws and military directives to integrate military land use and natural resources management in a manner consistent with Federal and State stewardship requirements, while being responsive to host community and other stakeholder concerns. (See Section 3 for further details on the planning approach and structure of this updated INRMP and the current guidance followed in its preparation).

¹ The Federal fiscal year (FY) is October 1 – September 30 unlike the State of Hawaii FY that is July 1 – June 30.

COOPERATIVE PREPARATION

Per the SAIA, this updated INRMP has been prepared in cooperation with US Fish and Wildlife Service (USFWS), and Hawaii Department of Land and Natural Resources (DLNR) (the “cognizant State fish and game agency” required to be involved per the SAIA). Since the INRMP also covers coastal and offshore marine natural resources within Marine Corps Base Hawaii’s Kaneohe Bay (MCBH-KB)’s 500-yard seaward security buffer zone around Mokapu Peninsula, the plan was also coordinated with National Oceanographic and Atmospheric Administration (NOAA) Fisheries. For a record of coordination with these and other stakeholder agencies, see Section 9 Stakeholder Involvement and Appendices G4 and G5, documenting stakeholder review and comment. Recent updated guidance, including a January 2006 Tripartite Memorandum of Understanding between the Department of Defense, US Fish and Wildlife Service, and the International Association of Fish and Wildlife Agencies, provides additional detail on the continuing policy of cooperation and coordination among these agencies in the preparation, update, and implementation of installation INRMPs (see Section 5 and Appendix A6). Appendix E2 contains documentation of MCBH annual progress reviews during the first five years of INRMP implementation and requests for input from Sikes Act partners in the review process.

CONTENT

The updated MCBH INRMP (2007-2011) is organized the same as the 2001 INRMP/EA (2002-2006) in so far as describing INRMP implementation. It covers the same geographic parcels included in the original INRMP/EA.² MCBH continues to follow an ecosystem management approach involving execution of a suite of many possible management actions within seven different Course of Action (COA) areas of concern that were carefully constructed during development of the 2001 INRMP/EA to represent the full array of natural resources and concerns found on MCBH properties. The overall plan content is discussed in further detail in Section 7.0 and the seven COA component plans that follow in subsections of Section 7: 7.1 Fish and Wildlife Management; 7.2 Wetland Management; 7.3 Watershed Management; 7.4 Coastal and Marine Resources Management; 7.5 Grounds Maintenance and Landscape Management; 7.6 Quality of Life, Outdoor Recreation, and Outreach Management; and 7.7 Resources Information Management. The management actions within each component plan can be grouped into alternative sets for implementation in differing combinations. Different groupings depend on factors such as which geographic parcel they apply to, the level of effort applied, and the impact of the effort on MCBH’s capability to sustain both environmental compliance and the military mission (see Section 7.0 for further details).

IMPLEMENTATION LEVEL OF EFFORT

In general, across most MCBH parcels, within the structure of the plan described above, there are three alternative sets of management actions and levels of effort that can be undertaken to implement INRMP management actions: Operational Stewardship (Continuing Current Level of Action Effort, i.e., the “No Action” or continue the status quo alternative in the 2001 INRMP/EA), Compliance-focused Stewardship

² The INRMP covers three MCBH parcels on windward O’ahu in the Ko’olaupoko district: MCBH-KB on Mokapu Peninsula, Marine Corps Training Area Bellows (MCTAB) in Waimanalo, and Waikane Valley Impact Area in Waikane Valley. It also covers Camp H.M. Smith in Halawa Heights and Puuloa Training Facility on the ‘Ewa coastal plain. See Sections 4 and 6 and Appendix B for further information on these locations and their environments.

(reduced level and type of effort), or Optimal Stewardship (increased level and type of effort). These are the same three alternative combinations of management actions and levels of effort considered for implementing MCBH INRMP management actions in the seven COAs within the 2001 INRMP/EA. Considering these alternative sets of actions and levels of effort during the INRMP development and update process helps to define the minimum/maximum range of management efforts possible within the INRMP implementation framework, while still adhering to relevant laws, regulations, and directives.³ MCBH's commitment was to Operational Stewardship during the time frame of the 2001 INRMP/EA implementation. Since this updated INRMP continues the current "Operational Stewardship" level of management effort in implementing the integrated natural resources management program, no update to the NEPA (National Environmental Policy Act) analysis is required or contained in this document. See Table E3-2 in Appendix E3 for further detail.

Table 2-1. Number of MCBH INRMP Operational Stewardship Management Actions Planned for Yearly Implementation (CY07-CY11)

Course of Action Component	Number of Management Actions					
	Total	CY07	CY08	CY09	CY10	CY11
7.0: Overall Program Management	4	3	3	3	4	3
7.1: Fish and Wildlife Management	40	37	39	36	37	37
7.2: Wetland Management	16	8	12	9	10	10
7.3: Watershed Management	9	9	5	6	4	4
7.4: Coastal and Marine Resources Management	15	11	14	13	13	12
7.5: Grounds Maintenance and Landscape Management	16	13	14	12	14	12
7.6: Quality of Life, Outdoor Recreation, and Outreach Management	7	3	5	4	5	3
7.7: Resource Information Management	19	15	16	14	16	15
TOTAL	126	99	108	97	102	96

NOTE: The above number of management actions committed to over the next five years (i.e., 126) is similar to those committed to in the original INRMP/EA implementation time frame under the Operational Stewardship Level of Effort (i.e., 123). A more detailed table and breakdown is included in Section 3. The 'Total' column represents the total number of management actions contained within any COA component plan. The numbers in the CY columns represent the subset of this total that is scheduled for implementation in any given year.

This updated INRMP contains the details to clearly demonstrate MCBH's commitment to continue the same "Operational Stewardship" level of effort during the next five years (2007-2011) as in the first five years of INRMP implementation (2002-2006). The total number of management actions (**126**) and the total amount of funds (**\$8.745M**) committed to implementing the updated INRMP as compared to that displayed in the original INRMP/EA are very similar (compare Tables 2-1 and 2-2 of the updated INRMP

³ In order to satisfy the National Environmental Policy Act (NEPA) requirements when the original INRMP/EA was developed, potential environmental impacts were analyzed and discussed for the three alternative sets of management actions considered (see Sections 5 and 8, and Appendix C of the 2001 INRMP/EA). Each Alternative comprised a set of programmatic actions which vary in intensity and duration over the time frame of the INRMP.

1 to Tables ES-1 (123 management actions) and ES-2 (\$8.088M) in the 2001 INRMP/EA). Should there be
2 a sudden significant change of mission, natural resource condition, or level of fiscal/staff support to the
3 program during the next five years, the level of effort could be reduced to the “Compliance-focused
4 Stewardship” level—i.e., doing only those actions that ensure minimum compliance with relevant laws
5 and regulatory agreements. MCBH is committed to performing an “Optimal Level of Stewardship”
6 management effort whenever the opportunity arises. For example, if an outside, unexpected source of
7 funding or partner support facilitates MCBH conducting a “nice to have” management action in the
8 “Optimal” category – such as installing additional environmental displays or interpretive brochures –
9 MCBH would strive to accomplish this management action. There were occasions where this happened
10 in the first INRMP implementation time frame and it can be reasonably expected to occur over the next
11 five years as well. Defining a range of management action sets under alternative levels of effort within
12 the bounds of Minimum, Operational, and Optimum Stewardship is an important part of setting the
13 framework within which the INRMP can be implemented. It allows for a certain amount of flexibility and
14 adaptability to changing conditions, while continuing to adhere to a defined minimum set of actions and
15 effort levels across all the alternatives.

17 **IMPLEMENTATION PROGRESS SINCE THE ORIGINAL 2001 INRMP/EA**

18 November 2001 marked the beginning of MCBH INRMP implementation with the INRMP/EA. The plan
19 was reviewed and concurred with by in-house stakeholders (e.g., MCBH Environmental Impact Review
20 Board) and the INRMP/Finding of No Significant Impact was signed off by the Base commander and
21 distributed for public review and comment (see Appendix G3). Required regulator concurrence was
22 received from USFWS, NOAA Fisheries, and Hawaii DLNR as documented in Appendix H of the 2001
23 INRMP/EA.

25 In the five years since MCBH's INRMP/EA was completed, steady progress was made to implement the
26 plan (see Appendix E2). At the time of this writing, most of the management actions planned in the 2001
27 INRMP/EA have been addressed, and all “must fund” discrete management projects (see Table 7.1, pg 7-
28 3 of the 2001 INRMP/EA) are either completed or in-progress. Some actions were implemented ahead of
29 schedule and some opportunities for optimal level of effort on management actions that were unforeseen
30 in 2001 were exploited (e.g., due to regional partnering and conferencing initiatives). Some less critical
31 management actions were deferred in order to address emergent priorities. Emergent priorities (e.g.,
32 increased tempo of military training since “9-11”) and changing natural resource conditions (e.g.,
33 prolonged drought) caused shifts in project implementation sequence. MCBH's overall INRMP has thus
34 far been implemented on time and within budget.

36 Details of steady progress summarized above are recounted in the annual progress reports sent to
37 cooperative partners, as required, during the past five years, and are reprinted in Appendix E2. Other
38 details about how successful INRMP implementation has been measured are presented in Section 7.0.7.

PROGRESS EXPECTED DURING THE UPDATED INRMP IMPLEMENTATION TIME FRAME

Section 7 of this INRMP documents past implementation of the INRMP as a context for presentation of updates for each set of management actions within the seven COA Component Plans. Supporting information includes documentation of past INRMP implementation progress (Appendix E2), and information relating to active and programmed management actions (Appendix E3). Details on the organization of the staff and funding to support implementation of the INRMP are presented in Section 4 and Appendix E4. Table E3-1 in Appendix E and summary Table 2-2 illustrate how funds will be invested across the seven COA components. The Operational Stewardship (Continuing Action) Alternative will invest the level of funding that has been consistently invested over the past five years at current levels of staffing and materials support. As described in this document, this level of effort is already beyond minimum compliance in all seven COA components. In keeping with ecosystem management principles of adaptive management and continuous improvement, sustaining the current level of effort does not preclude also implementing actions unique to the Optimal Stewardship action set. As has been the experience of the MCBH natural resources management program over the past twenty-five years, unforeseen opportunities often arise and will be readily used, when feasible, to complete "Optimal Stewardship" management actions in areas such as interagency partnering, community volunteer assistance, and securing supplemental funding sources.

Table 2-2: Summary Funding Plan for INRMP Implementation

(See Table E3-1, Appendix E3 for further details.)

Funding Category	Funding Amount (\$M) CY2007-2011					
	07	08	09	10	11	Total
7.0: Overall Program Management: Labor, Materials, Training	0.480	0.506	0.533	0.561	0.591	2.671
7.0: Overall Program Management: Update INRMP (CY10)	0	0	0	0.250	0	0.250
7 COA Management Components	1.052	1.675	2.277	0.224	0.596	5.824
TOTAL	1.532	2.181	2.810	1.035	1.178	8.745

OTHER CONSIDERATIONS

The implementation of this INRMP will be consistent with other pertinent land use and natural resource-related plans, policies, and controls in the affected regions as described in Section 8. Section 9 describes how management actions in the updated INRMP will continue to achieve stakeholder participation in such areas as public involvement and outreach, interagency partnering, and cooperative conservation.

1 CONCLUSION

2 This updated INRMP demonstrates how MCBH will continue to achieve an overall ecosystem
3 management goal of improving the sustainability and native biological diversity of the ecosystems of
4 which it is a part, while supporting MCBH's military mission. This goal-driven document shows how
5 MCBH will manage its natural resources by systematically adhering to specific objectives under each goal
6 and to management actions listed under each objective. As a result, the following desired end states will
7 continue to be achieved: support present and future mission requirements; preserve ecosystem integrity
8 (at a scale and timeline compatible with natural and budgetary processes); recognize and address its
9 influence on social and economic well-being of the communities affected (both military and host civilian
10 communities); adapt to complex, changing requirements; and explore and engage in collaborative
11 partnerships involving regional stakeholders with shared natural resources responsibilities and concerns,
12 to the extent practicable. As such, this updated INRMP fulfills the requirements of the Sikes Act
13 Improvement Act, other pertinent laws (e.g., Endangered Species Act) and military directives, including
14 the requirements to sustain support of the USMC and MCBH mission and vision and to preserve, protect
15 and enhance the inherent values of the natural resources held in the public trust and for the public
16 interest on MCBH properties.

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REFERENCE FORM 6

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Environmental Compliance Protection Department

Document Reviewed: *Closure Report, Removal of Underground Storage Tanks (KB-32) at Various U.S. Army Facilities, Hawaii.* Prepared for USACE. Prepared by Morrison Knudsen Corporation. 30 December 1994.

Pages Viewed:

Date Viewed:

Results: Information incorporated into the ECP.

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UNDERGROUND STORAGE TANK (UST)

CLOSURE REPORT

**REMOVAL OF UNDERGROUND STORAGE TANKS
at VARIOUS U.S. ARMY FACILITIES, HAWAII
Contract No. DACW45-90-D-0029, D.O. No. 5**

MK Report No. 4277 - CR - 015
UST ID No. KB-32
Facility : Building 3902
Installation : Marine Corp Base, Hawaii

U.S. Army Corps of Engineer Project Manager: (b) (6)
MK Project Manager: (b) (6)

MORRISON KNUDSEN CORPORATION
Environmental Service Division
7100 East Belleview Avenue
Englewood, Colorado 80111
(808) 944-6633, (303) 793-5000

Date prepared: December 30, 1994

EXECUTIVE SUMMARY

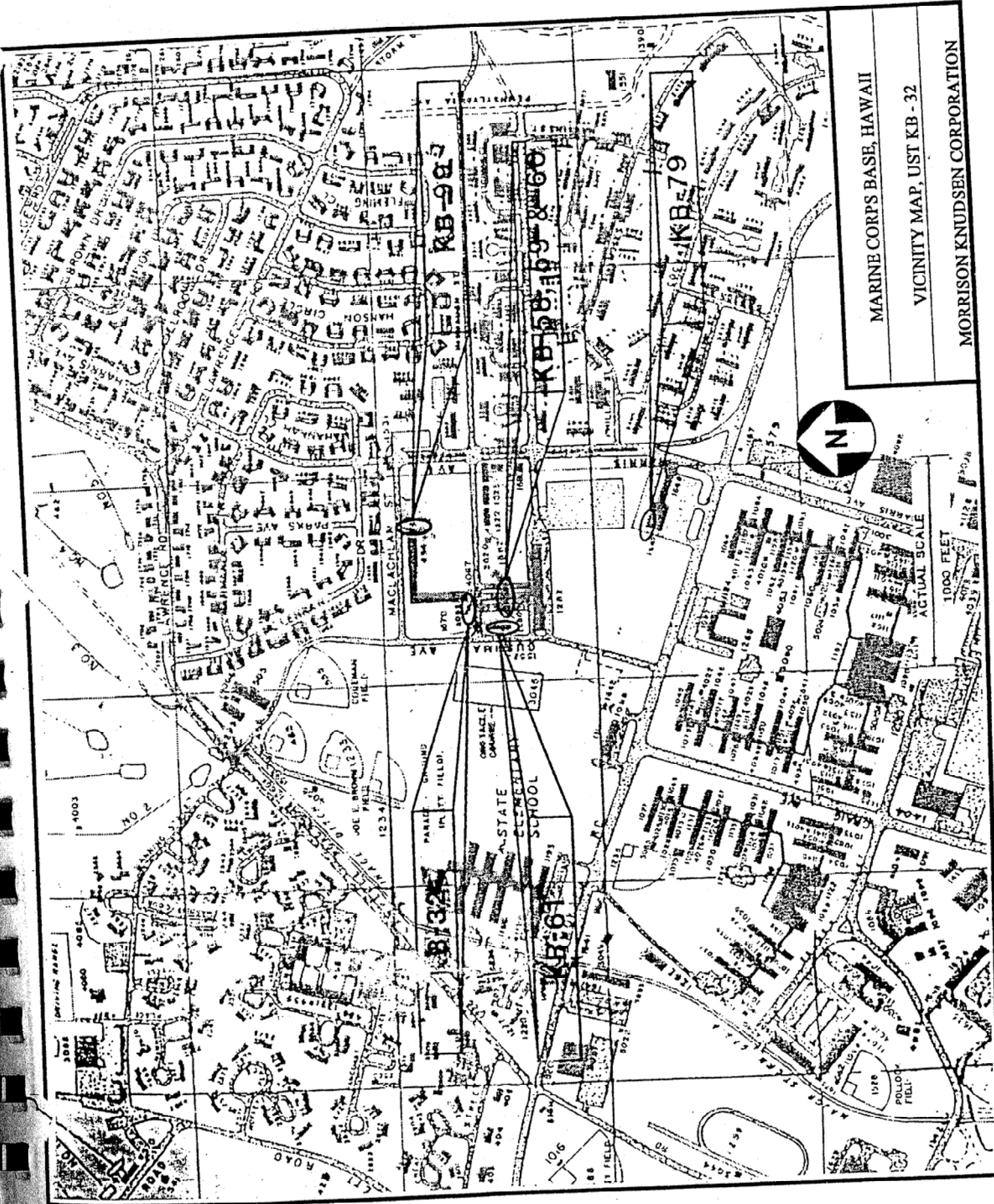
Morrison Knudsen Corporation, Environmental Services Division (MK) received Contract No. DACW-45-90-D-0029, Delivery Order No. 5, Removal of Underground Storage Tanks at Various U.S. Army Facilities, Hawaii from the U.S. Army Corps of Engineers. Oversight of the project was transferred to COE Pacific Ocean Division. This closure report summarizes the activities associated with the removal, closure, and surface restoration of a 550 gallon underground storage tank located near building 3902, Marine Corps Base Hawaii.

The UST was identified as KB-32. The UST system consisted of one 550 gallon, reinforced, single walled, concrete tank, 6" diameter cast iron (CI) fill riser, 24" diameter manhole, and 12" diameter reinforced concrete (RC) pipe riser. The products stored were a mixture of waste oil and water, and the UST was out of service at the time of removal.

Excavation for the UST Removal began on September 21, 1994 and the tank was removed on September 22, 1994. The tank was located under a grass area 45' from the east facing wall of building 3902. There were no access problems. A telephone cable line and a 4" abandoned clay pipe line was encountered during excavation. The structural condition of the tank was good. No cracks or holes were observed on the tank walls. No confirmed release actions were taken nor needed. The concrete tank was demolished and disposed of at Nanakuli Landfill.

One closure sample was collected beneath the tank. The soil was analyzed and determined to be 'not ignitable'. Concentrations of Acenaphthene, Benzo(a)pyrene, Fluoranthene, Napthalene, Tetrachloroethene, Trichlorethane, Polychlorinated Biphenyls and metals were below DOH's interim recommended clean-up criteria for soil.

The planned use for the site is a day care center for military dependants. Final restoration work was completed on October 18, 1994. The site was backfilled and compacted to match the original surface features. A clean closure was concluded, and no additional work is recommended for the former UST site.



MARINE CORPS BASE, HAWAII

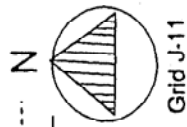
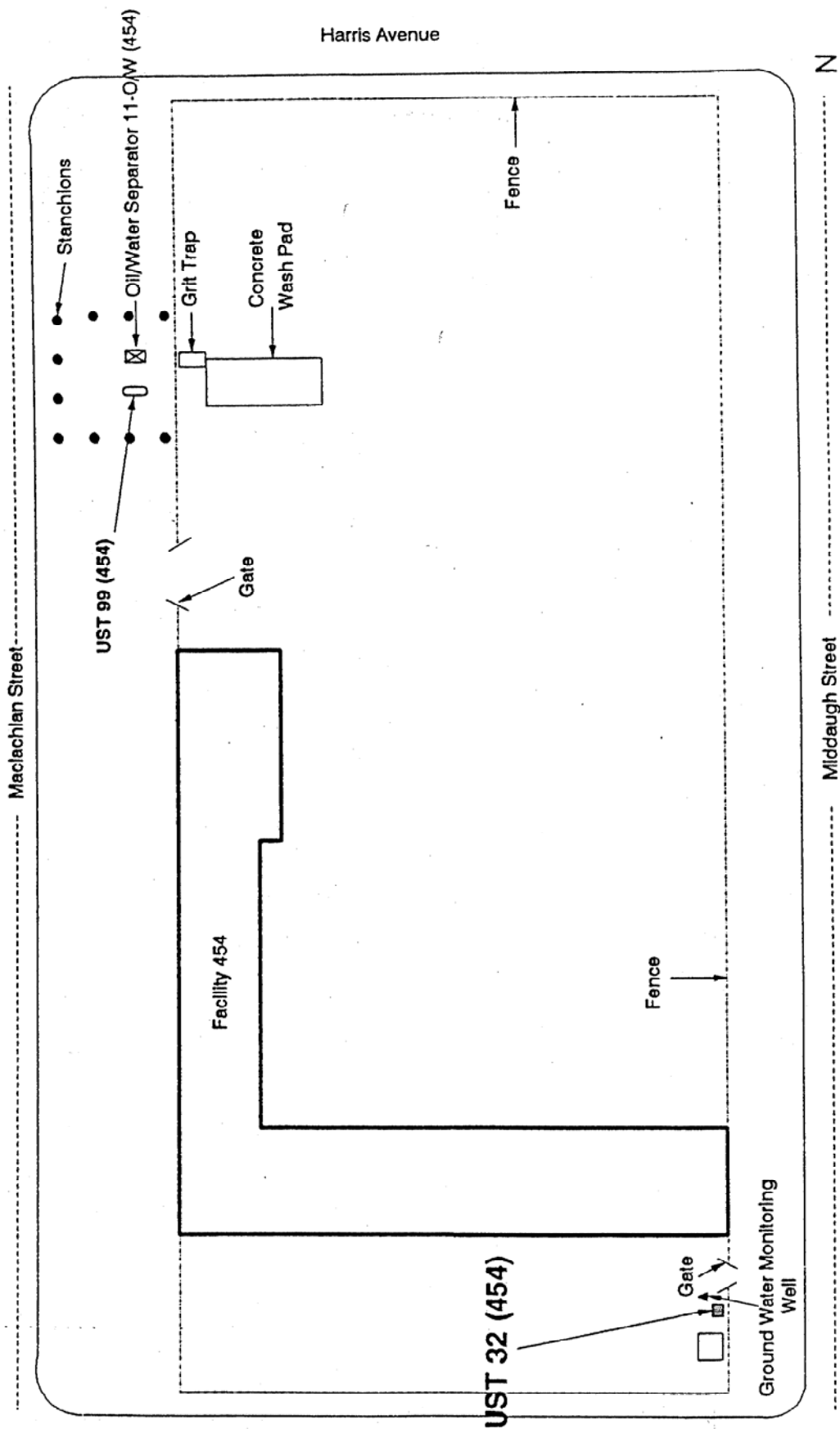
VICINITY MAP, UST KB - 32

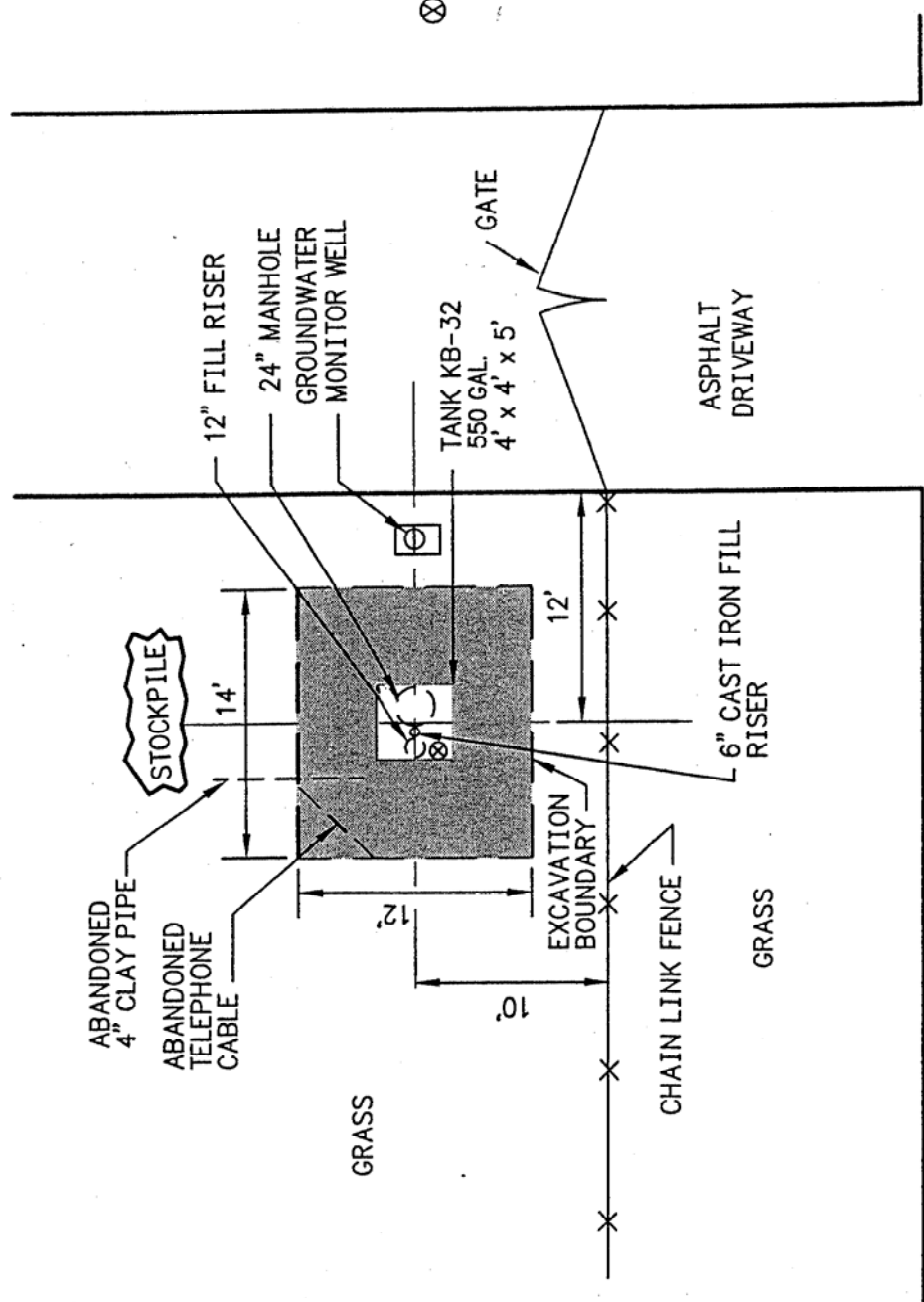
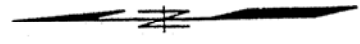
MORRISON KNUDSEN CORPORATION



1000 FEET
ACTUAL SCALE

MCAS Kaneohe Bay
UST 32 (454)





LEGEND

TANK KB-32

- ⊗ SOIL SAMPLE #00/KB-32/03
- SAMPLE DEPTH 8 FT.
- CONCRETE TANK DEMOLISHED AND REMOVED SEPT. 22, 1994
- 4" ABANDONED CLAY PIPE ENCOUNTERED AND REMOVED
- ABANDONED TELEPHONE LINE ENCOUNTERED

USACE

MCAS
KANELOE BAY, HAWAII

UST SITE PLAN
TANK KB-32
TANK REMOVAL

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP
DENVER, COLORADO

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REFERENCE FORM 7

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Environmental Compliance Protection Department

Document Reviewed: *Underground Storage Tank (UST) Closure Report, UST ID No. KB-58 and KB-59.* Prepared for USACE. Prepared by Morrison Knudsen Corporation. 30 December 1994.

Pages Viewed: Entire Document (see attached Executive Summary)

Date Viewed: April 2007

Results: Closure completed and no further action recommended.

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**UNDERGROUND STORAGE TANK (UST)
CLOSURE REPORT**

**REMOVAL OF UNDERGROUND STORAGE TANKS
at VARIOUS U.S. ARMY FACILITIES, HAWAII
Contract No. DACW45-90-D-0029, D.O. No. 5**

MK Report No. 4277 - CR - 016
UST ID No. KB-58 and KB-59
Facility : Former structure 1281
Installation : Marine Corps Base, Hawaii

U.S. Army Corps of Engineer Project Manager: (b) (6)
MK Project Manager: (b) (6)

MORRISON KNUDSEN CORPORATION
Environmental Service Division
7100 East Belleview Avenue
Englewood, Colorado 80111
(808) 944-6633, (303) 793-5000

Date prepared: December 30, 1994

EXECUTIVE SUMMARY

Morrison Knudsen Corporation, Environmental Services Division (MK) received Contract No. DACW-45-90-D-0029, Delivery Order No. 5, Removal of Underground Storage Tanks at Various U.S. Army Facilities, Hawaii from the U.S. Army Corps of Engineers. Oversight of the project was transferred to COE Pacific Ocean Division. This closure report summarizes the activities associated with the removal, closure, and surface restoration of two 6,000 gallon underground storage tanks located at former structure 1281, Marine Corps Base, Hawaii.

2

The USTs were identified as KB-58 and KB-59. The UST system consisted of two 6,000 gallon, single walled, steel tanks, vent lines, product lines, and direct fill pipes. As well, valve pits, a dispenser island, associated piping and concrete pads were removed. UST KB-58 and KB-59 were buried next to each other. Both tank removal activities occurred about the same time because of the proximity of the two tanks. KB-58 and KB-59 were used to store unleaded gasoline and diesel, respectively, and were out of service at the time of removal. Both tanks were installed in 1965 and deactivated in 1991.

Excavation for the UST Removal began on September 1, 1994. Tanks KB-58 and KB-59 were removed on September 2, 1994. The tanks were located under a grass area, 45' west of former structure 1281 site. There were no access problems. No overhead interferences were encountered during excavation. A 3/4" water line and a 1/2" compressed air line at the dispenser island was uncovered. These associated lines were cut, capped and removed, up to the limits of the excavation. The structural condition of the two USTs was fair. Both were lightly corroded and without any visible holes. The soils under the product lines of the tanks were stained. Soil was remediated and sent for treatment.

Pacific Thermas Services, Inc. (PTSI) received 187 tons of petroleum contaminated soil from site 2606. The petroleum contaminated soil was treated by thermal desorption. Upon completion of the treatment, the petroleum contaminated soil had been remediated, and the end product is in

accordance with clean-up levels specified by the State of Hawaii in the PTSI operating permit (RM 0021-93).

Two soil samples were collected from beneath each tank and one under the remote fill piping of each tank for closure confirmation. The soil samples collected from KB-58 were analyzed for total petroleum hydrocarbons as gasoline range organics. The soil samples collected from KB-59 were analyzed for total petroleum hydrocarbons as diesel. The samples were determined to be 'not ignitable'. Concentrations of Benzene, Toluene, Ethyl benzene, Acenaphthene, Benzo(a) pyrene, Fluoranthene, Napthalene lead and eight RCRA metals were below DOH's interim recommended clean-up criteria for soil.

The planned use for the site will be a day care center. The site was a military motor pool fill station previously. Final restoration work was completed on September 23, 1994. The site was grassed to match the original surface features. A clean closure was concluded, and no additional work is recommended for the former UST site.



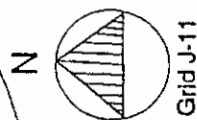
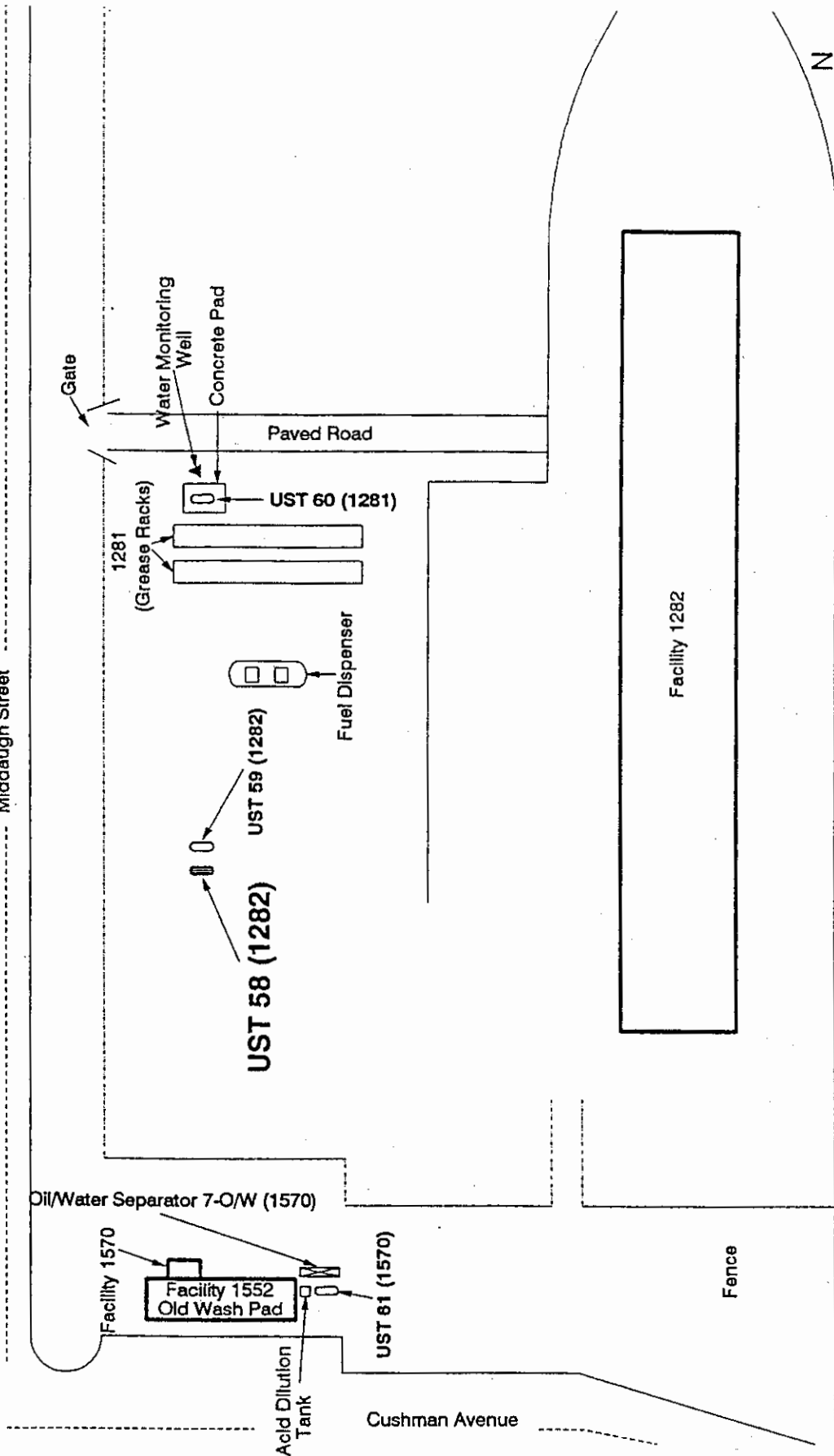
MARINE CORPS BASE, HAWAII

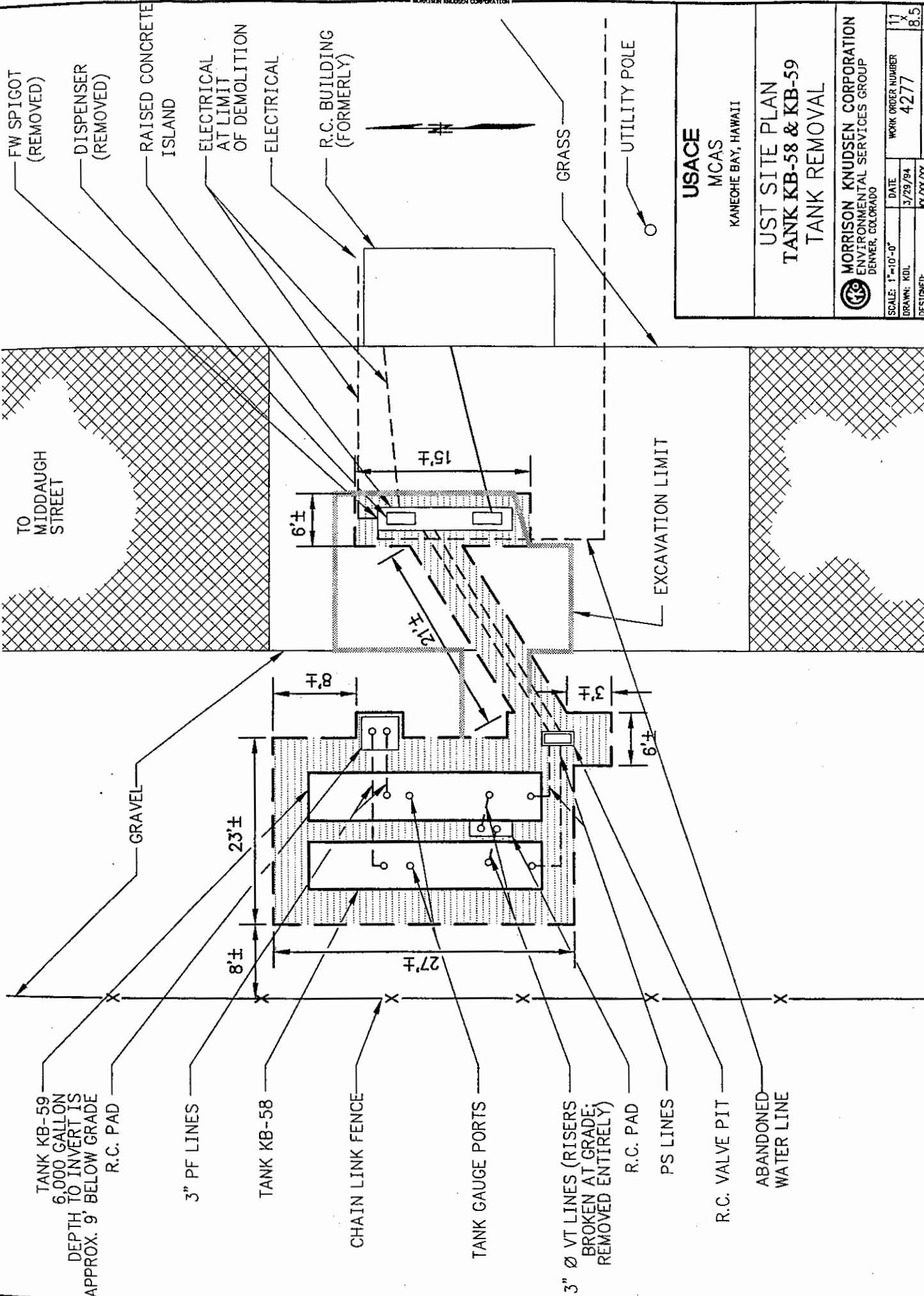
VICINITY MAP, UST KB - 58 & 59

MORRISON KNUDSEN CORPORATION

MCAS Kaneohe Bay
UST 58 (1282)

Middaugh Street





USACE

MCAS
KANEHOE BAY, HAWAII

**UST SITE PLAN
TANK KB-58 & KB-59
TANK REMOVAL**

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP
DENVER, COLORADO

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MORRISON KNUDSEN CORPORATION

REFERENCE FORM 8

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of the Navy, NAVFAC PACIFIC

Document Reviewed: *Removal of Underground Storage Tanks, Various U.S. Army Facilities, HI, Marine Corps Air Station, Final Closure Report, Tank Site KB-60.* Prepared by Morrison Knudsen Corporation.
30 December 1994.

Pages Viewed:

Date Viewed:

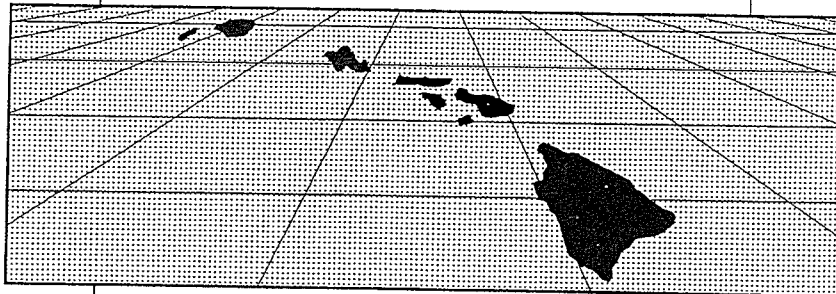
Results: Information incorporated into the ECP.

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**U.S. Army Corps
of
Engineers**

**CONTRACT NO. DACW 45-90-D-0029
DELIVERY ORDER NO. 5
MODIFICATION NO. 05**

Removal of Underground Fuel Storage Tanks
Various U.S. Army Facilities, Hawaii



**MARINE CORPS AIR STATION
KANEHOE BAY**

**Final Closure Report
TANK SITE KB-60**

Morrison Knudsen Corporation

EXECUTIVE SUMMARY

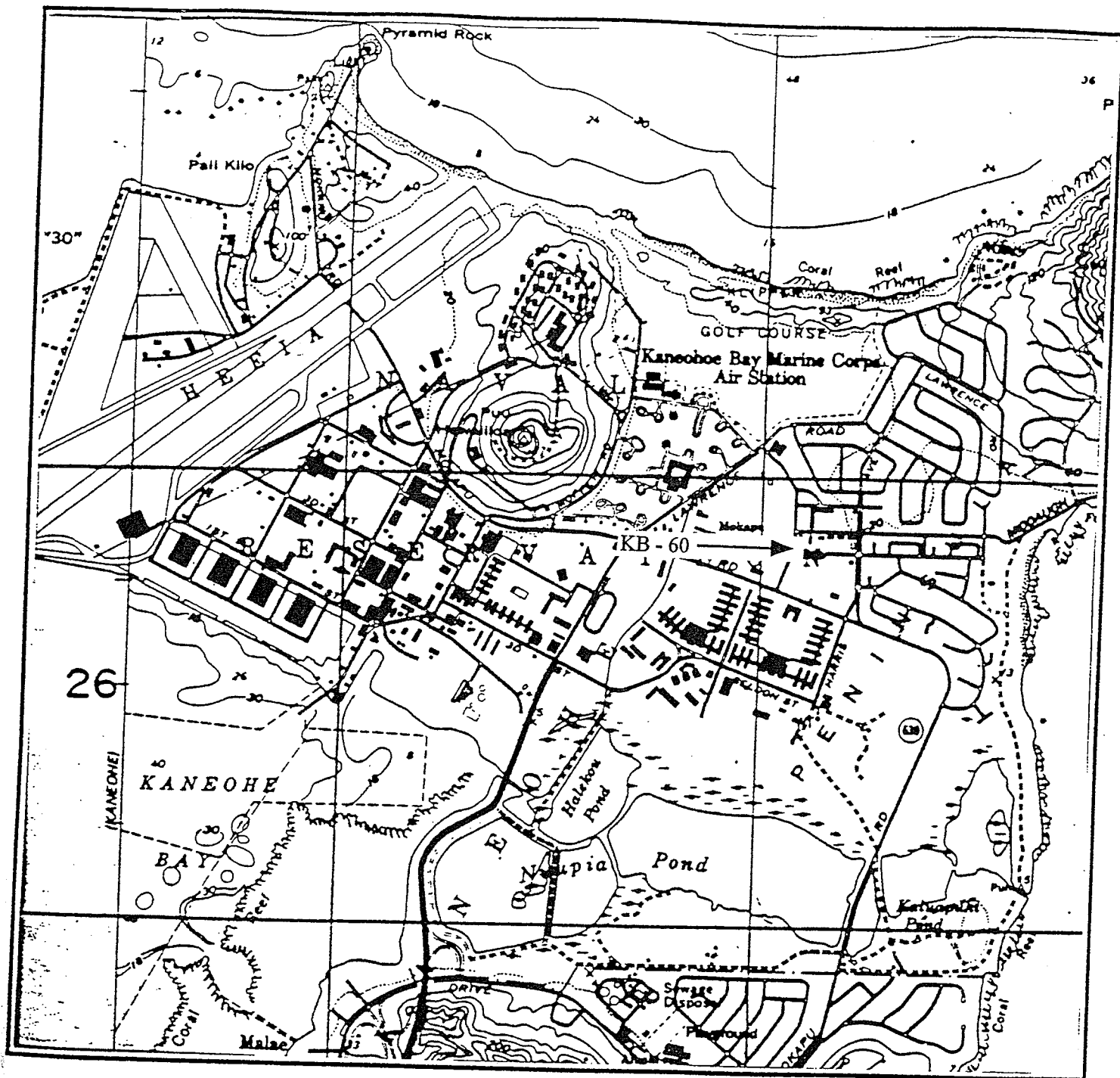
Morrison Knudsen Corporation, Environmental Services Division (MK) received Contract No. DACW-45-90-D-0029, Delivery Order No. 5, Removal of Underground Storage Tanks at Various U.S. Army Facilities, Hawaii from the U.S. Army Corps of Engineers. Oversight of the project was transferred to COE Pacific Ocean Division. This closure report summarizes the activities associated with the removal, closure, and surface restoration of a 2,000 gallon underground storage tank located near a reinforced concrete building slab (formerly building 1280), Marine Corps Base Hawaii.

The UST was identified as KB-60. The UST system consisted of one 2,000 gallon steel tank, 2" vent line, 4" top clean out and a 2" direct fill pipe. The products stored were a mixture of waste oil and water, and the UST was out of service at the time of removal. The UST was installed in 1965. This UST was exclusively used by Marine Corp Base, Hawaii to store used product generated by a former heavy equipment service station.

Excavation for the UST removal began on September 2, 1994 and was removed on September 6, 1994. The tank was located under a concrete pad 15 feet east of a reinforced concrete building slab. There were no access problems. No overhead interferences were encountered during excavation. A 6" water line was encountered, which ran along the longer side of the excavation walls. An electrical raceway, encased in a concrete jacket, was uncovered along the west wall of the excavation; however, it was not disturbed. The structural condition of the tank was good. No corrosion patches or holes were observed on the tank walls. No confirmed release actions were taken nor needed.

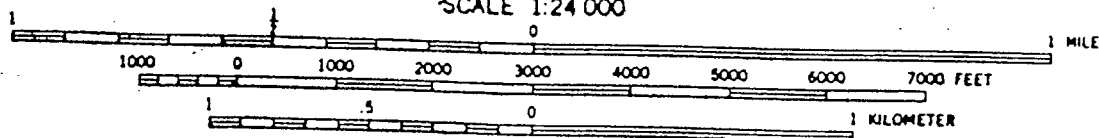
Two closure samples were collected from beneath the tank. The soil was analyzed and determined to be 'not ignitable'. Concentrations of Acenaphthene, Benzo(a)pyrene, Fluoranthene, Napthalene, Tetrachloroethene, Trichlorethane, Polychlorinated Biphenyls and eight RCRA metals were below DOH's interim recommended clean-up criteria for soil.

The planned use for the site is a day care center for military dependants. Final restoration work was completed on September 23, 1994. The site was backfilled and compacted to match the original surface features. A clean closure was concluded, and no additional work is recommended for the former UST site.



U.S.G.S. 7.5 MINUTE SERIES (Topographic)
Kaneohe Marine Base, Hawaii

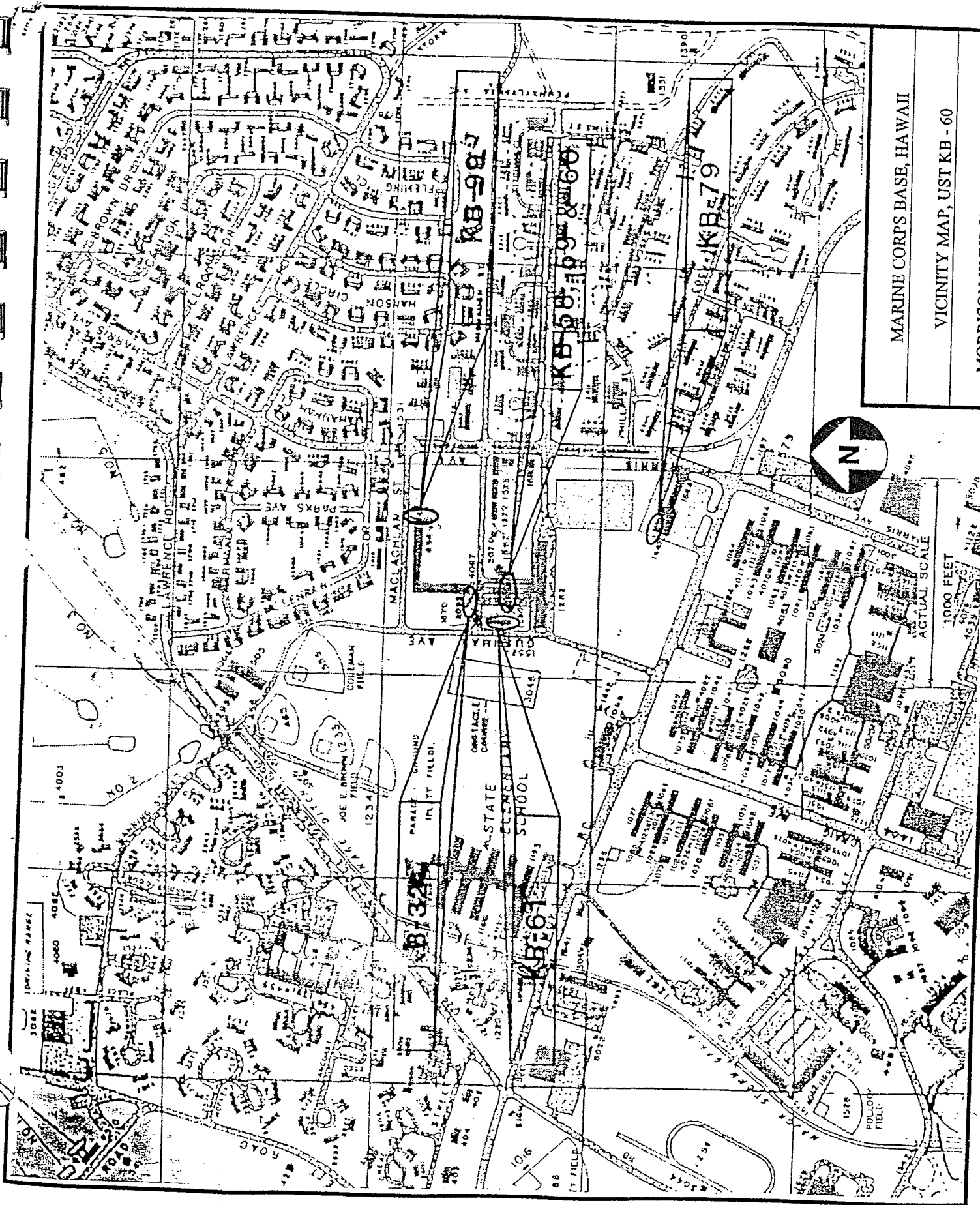
SCALE 1:24 000



LEGEND

- Underground Injection Control (UIC) line
- Injection well
- ◻ Drinking source
- ◻ Other well

TRUE NORTH
MAGNETIC NORTH
114°
APPROXIMATE MEAN DECLINATION 1983



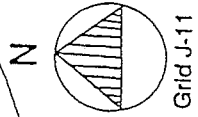
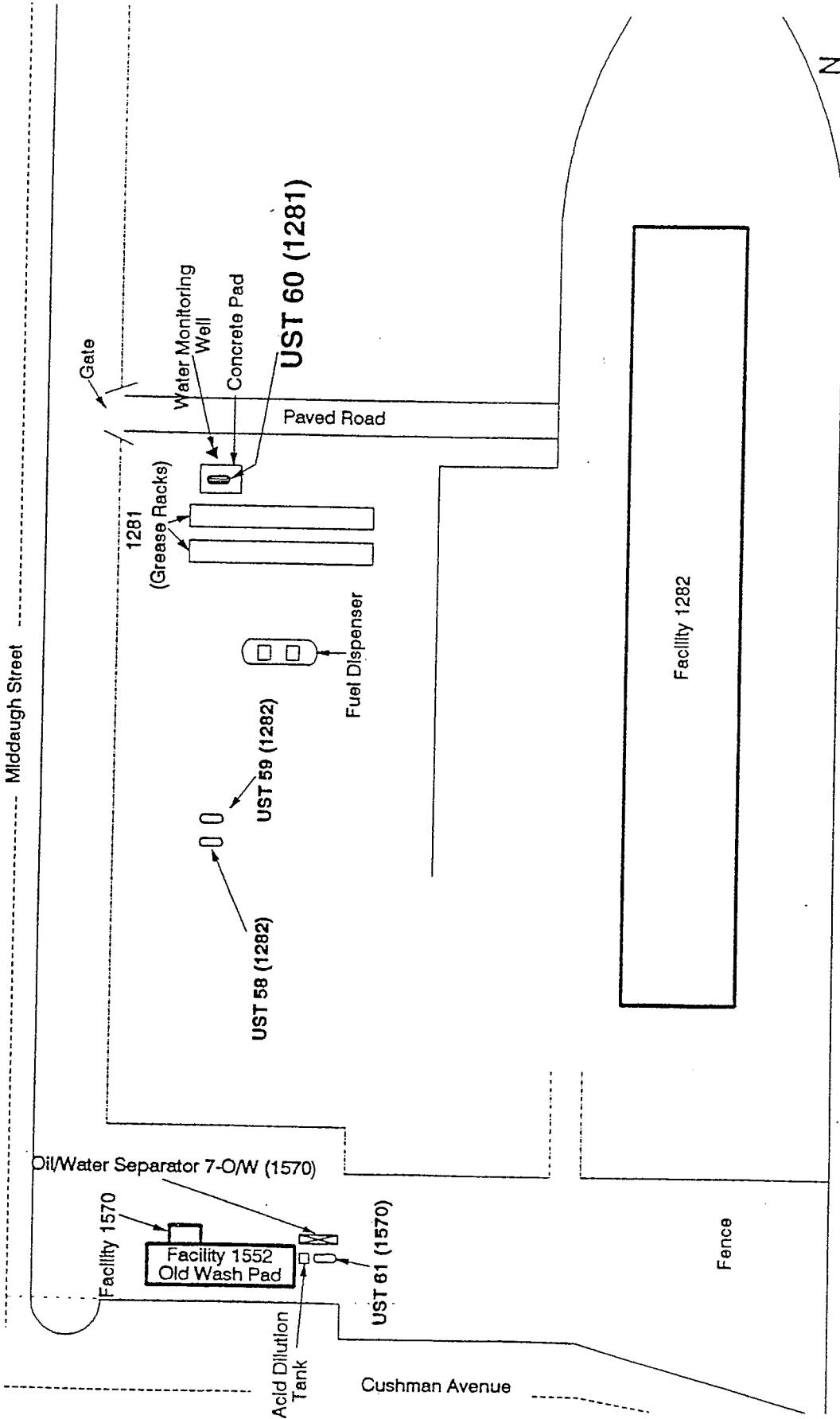
MARINE CORPS BASE, HAWAII

VICINITY MAP, UST KB - 60

MORRISON KNUDSEN CORPORATION

MCAS Kaneohe Bay
UST 60 (1281)

Middaugh Street

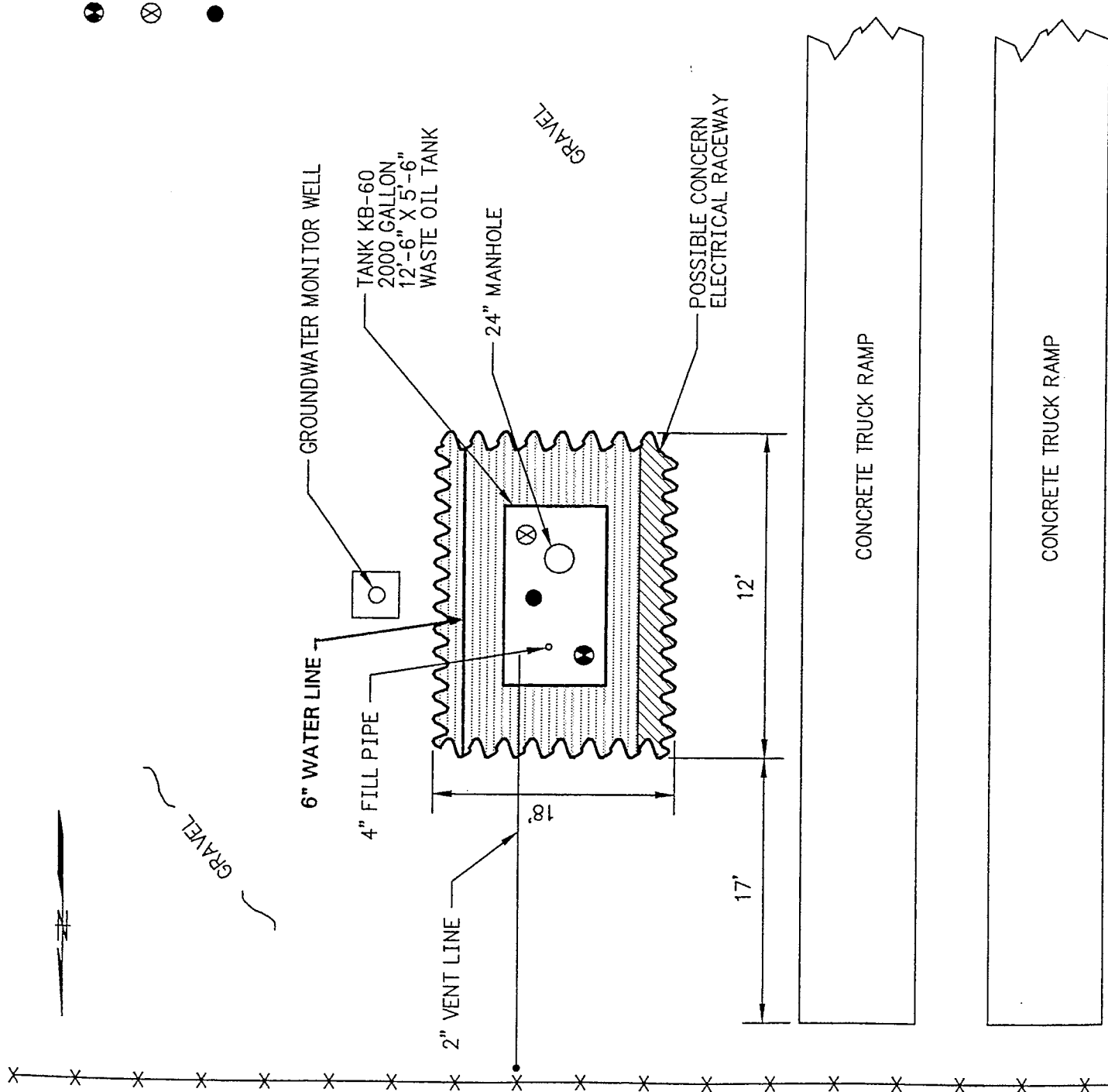




LEGEND

TANK KB-60

- SOIL SAMPLE UNDER TANK
-#00/KB-60/03A
- ⊗ SAMPLE DEPTH 12 FT.
SOIL SAMPLE UNDER TANK
-#00/KB-60/03B
- SAMPLE DEPTH 12 FT.
TANK SLUDGE SAMPLE #00/KB-60/01
-PIPING AND TANK REMOVED
SEPT. 6, 1994
- POSSIBLE ELECTRICAL RACEWAY
ENCOUNTERED, DID NOT DISTURB



USACE

MCAS

KANEOHE BAY, HAWAII

TANK SITE PLAN
TANK KB-60
TANK REMOVAL

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP
DENVER, COLORADO

SCALE: 1"=10'-0"	DATE: 3/29/94	WORK ORDER NUMBER: 4277	REV: 8.5
DRAWN: KOL	DESIGNED: KY/XX/XX	DRAWING NUMBER	FIGURE
CHECKED: 03/30/94	CADD FILE NAME: HAWAII04.DWG	REV: A	

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REFERENCE FORM 9

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Environmental Compliance Protection Department

Document Reviewed: *Underground Storage Tank (UST) Closure Report, UST ID No. KB-61.* Prepared for USACE. Prepared by Morrison Knudsen Corporation. 30 December 1994.

Pages Viewed: Entire Document (see attached Executive Summary)

Date Viewed: April 2007

Results: Closure completed and no further action recommended.

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**UNDERGROUND STORAGE TANK (UST)
CLOSURE REPORT**

**REMOVAL OF UNDERGROUND STORAGE TANKS
at VARIOUS U.S. ARMY FACILITIES, HAWAII
Contract No. DACW45-90-D-0029, D.O. No. 5**

MK Report No. 4277 - CR - 018
UST ID No. KB-61
Facility : Structure 1552
Installation : Marine Corp Base, Hawaii

U.S. Army Corps of Engineer Project Manager: (b) (6)
MK Project Manager: (b) (6)

MORRISON KNUDSEN CORPORATION
Environmental Service Division
7100 East Belleview Avenue
Englewood, Colorado 80111
(808) 944-6633, (303) 793-5000

Date prepared: December 30, 1994

EXECUTIVE SUMMARY

Morrison Knudsen Corporation, Environmental Services Division (MK) received Contract No. DACW-45-90-D-0029, Delivery Order No. 5, Removal of Underground Storage Tanks at Various U.S. Army Facilities, Hawaii from the U.S. Army Corps of Engineers. Oversight of the project was transferred to COE Pacific Ocean Division. This closure report summarizes the activities associated with the removal, closure, and surface restoration of a 500 gallon underground storage tank located near structure 1552, Marine Corps Base Hawaii.

The UST was identified as KB-61. The UST system consisted of one 500 gallon steel tank, 2" vent line, 2" product line, 2" clean out, drainage trench, oil/water separator and a grit trap. The products stored were a mixture of waste oil and water, and the UST was out of service at the time of removal. No records were available pertaining to the installation date and the parties involved in the tank's operation.

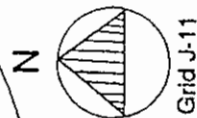
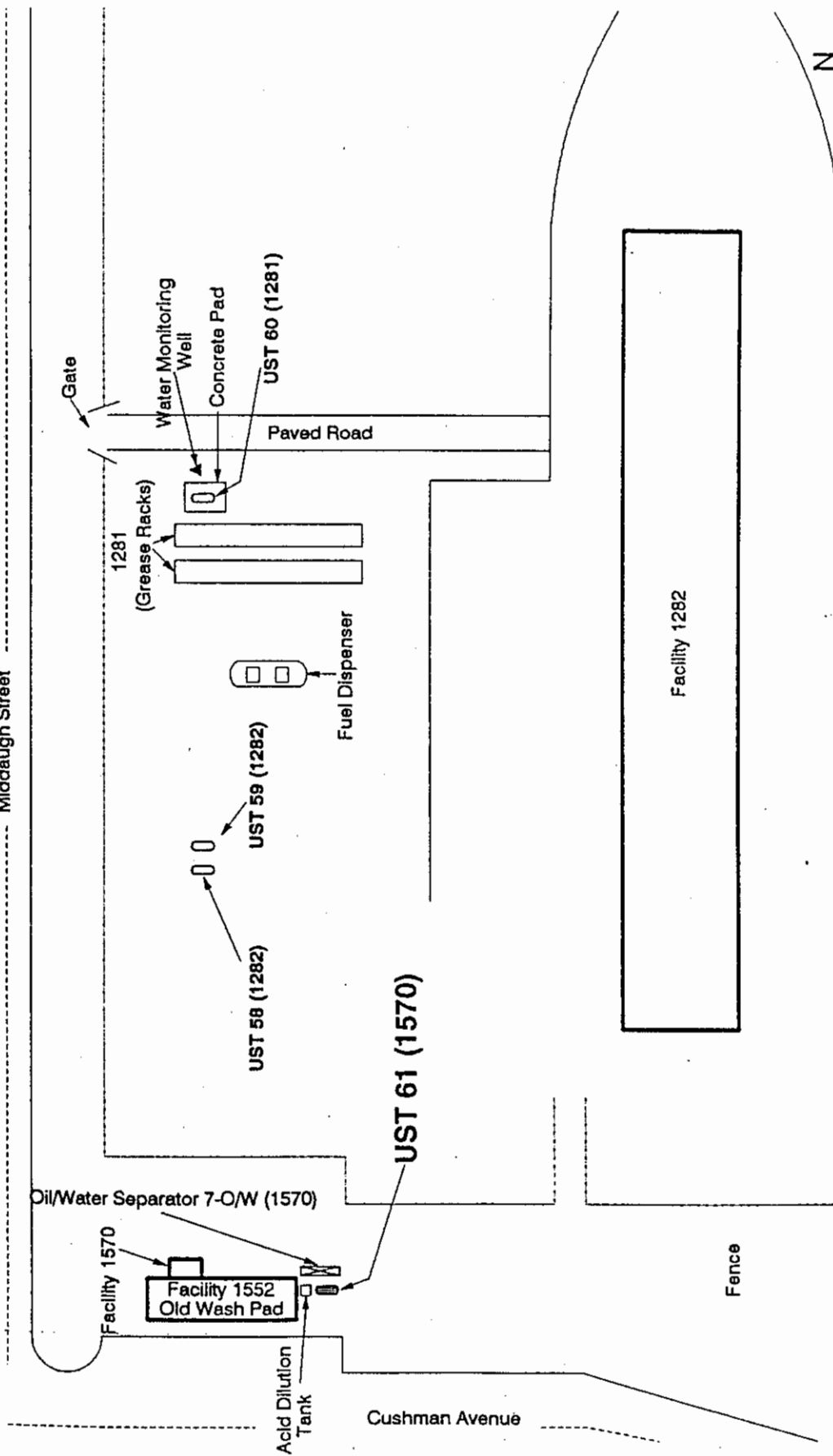
Excavation for the UST Removal began on September 7, 1994. The tank was located under a grass area 42' from the Cushman Avenue. There were no access problems. No overhead interferences were encountered during excavation. A 4" cast iron sanitary sewer pipe was encountered and removed. The structural condition of the tank was good. No corrosion patches or holes were observed on the tank walls. No confirmed release actions were taken nor needed.

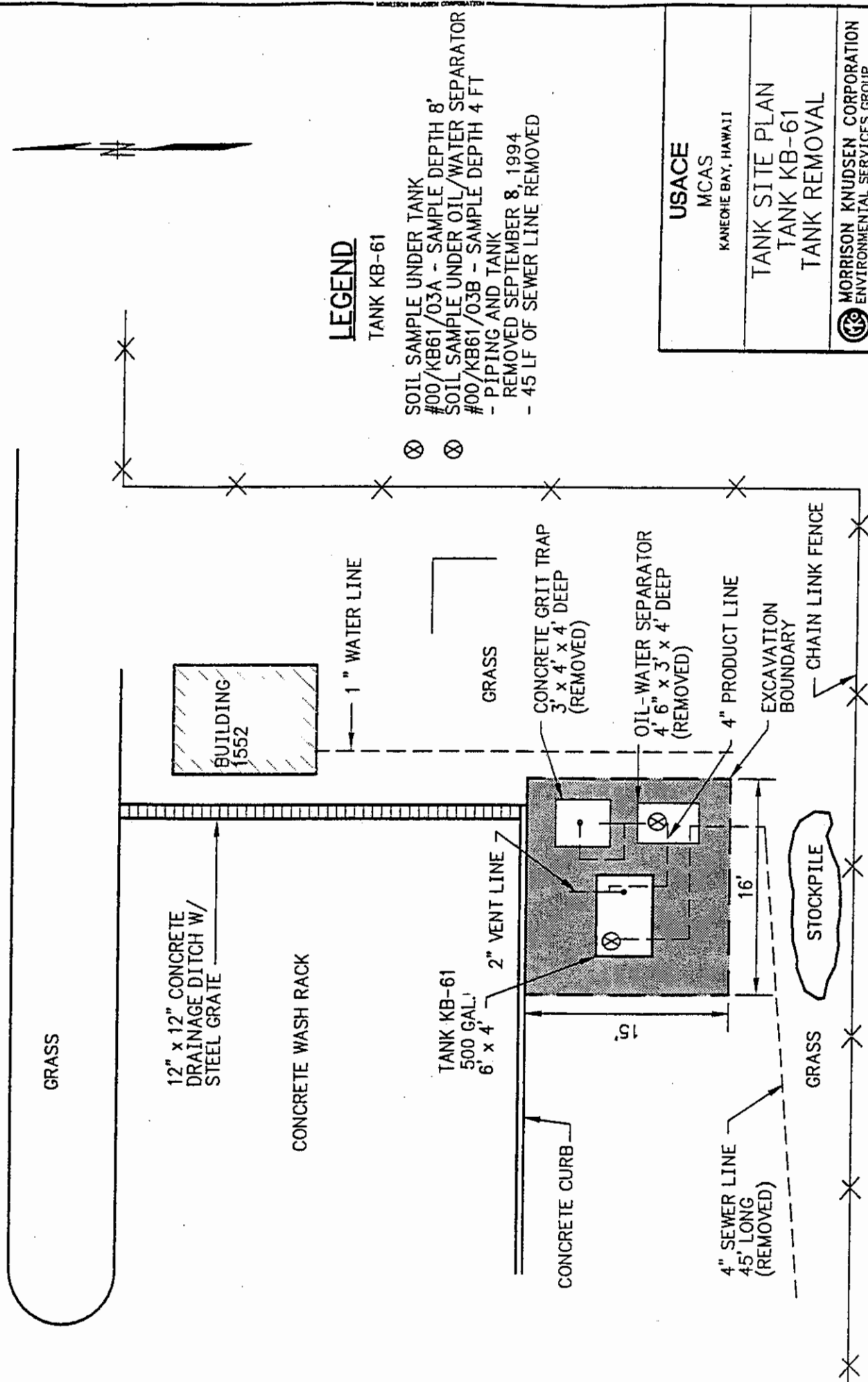
One sample was taken beneath the tank. The soil was analyzed and determined to be 'not ignitable'. Concentrations of Benzene, Toluene, Ethyl benzene, Acenaphthene, Benzo(a)pyrene, Fluoranthene, Napthalene, Tetrachloroethene, Trichlorethane, Polychlorinated Biphenyls, and metals were below DOH's interim recommended clean-up criteria for soil.

The planned use for the site is a day care center military purposes. Final restoration work was completed on September 23, 1994. The site was backfilled and compacted to match the original surface features. A clean closure was concluded, and no additional work is recommended for the former UST site.

MCAS Kaneohe Bay
UST 61 (1570)

Middaugh Street





LEGEND

TANK KB-61

- ⊗ SOIL SAMPLE UNDER TANK #00/KB61/03A - SAMPLE DEPTH 8'
- ⊗ SOIL SAMPLE UNDER OIL/WATER SEPARATOR #00/KB61/03B - SAMPLE DEPTH 4 FT
- PIPING AND TANK REMOVED SEPTEMBER 8, 1994
- 45 LF OF SEWER LINE REMOVED

USACE

MCAS
KANEHIE BAY, HAWAII

TANK SITE PLAN
TANK KB-61
TANK REMOVAL

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP
DENVER, COLORADO

SCALE: 1"=10'-0"	DATE	WORK ORDER NUMBER
DRAWN: DLH	10/25/94	4277
DESIGNED:		
CHECKED:		
CADD FILE NAME: HAWKWOODS.DWG		
	REV	DRAWING NUMBER
	8.5	
	REV	A

<CPTD: 10/25/94 [TIME: 12:22 AM] >

MORRISON KNUDSEN CORPORATION

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REFERENCE FORM 10

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of the Navy, NAVFAC PACIFIC

Document Reviewed: *Removal of Fuel Storage Tanks at Various Federal Facilities in Hawaii: Site Assessment Report, Underground Storage Tanks KB-75, kb-76, KB-77, and KB-78, Marine Corps Base Hawaii, Kaneohe, Oahu.* Prepared by Morrison Knudsen Corporation. 23 August 1999.

Pages Viewed: Executive Summary (See attached Executive Summary)

Date Viewed: April 2007

Results: Information incorporated into the ECP.

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SITE ASSESSMENT REPORT

**UNDERGROUND STORAGE TANKS KB-75,
KB-76, KB-77, AND KB-78
MARINE CORPS BASE HAWAII, KANEOHE, OAHU**

**STATE OF HAWAII DEPARTMENT OF HEALTH
FACILITY IDENTIFICATION NUMBERS 9-102139-75,
9-102139-76, 9-102139-77, AND 9-102139-78**

**REMOVAL OF FUEL STORAGE TANKS
AT VARIOUS FEDERAL FACILITIES IN HAWAII**

**CONTRACT DACW68-94-D-0005
DELIVERY ORDER NUMBER DO 13**

FINAL

2 OF 2

**prepared for
USACE-POD
FORT SHAFTER, HAWAII**

**by
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL GROUP**

August 23, 1999

SITE ASSESSMENT REPORT
UNDERGROUND STORAGE TANKS KB-75, KB-76, KB-77, AND KB-78
STATE OF HAWAII DOH FACILITY IDENTIFICATION NUMBERS 9-102139-75,
9-102139-76, 9-102139-77, AND 9-102139-78

EXECUTIVE SUMMARY

Underground Storage Tanks KB-75, KB-76, KB-77, and KB-78 (State of Hawaii Department of Health Facility Identification Numbers 9-102139-75, 9-102139-76, 9-102139-77, and 9-102139-78) were active tanks located at Facility 1667, the Marine Corps Base Hawaii, Kaneohe gas station, on Oahu, Hawaii. These tanks were 10,000-gallon single-wall fiberglass tanks that contained unleaded gasoline. The tanks were excavated, cleaned, and disposed of during September 2 through September 4, 1998.

Although the tanks passed a leak detection test in December 1991, two releases were noted: a leaky pipe joint that contaminated 12 cubic yards of material and an unknown source, possibly from a previously removed fuel system, that contaminated 162 cubic yards of material. Approximately 174 cubic yards of contaminated soil were transported to the Marine Corps Base Hawaii, Kaneohe landfarm for treatment by bioremediation. Confirmed release notifications were submitted on April 7, 1998 for releases around pump islands 1, 2, and 3 and on October 27, for releases around the tank excavation and pump islands 4, 5, and 6. These notifications were sent to the United States Army Corps of Engineers, Pacific Ocean Division, to be forwarded to the Hawaii Department of Health. The Department of Health assigned release numbers 980082 and 990033 to the site. However, on November 11, 1998, the Department of Health stated that release number 980082 would apply to the entire site.

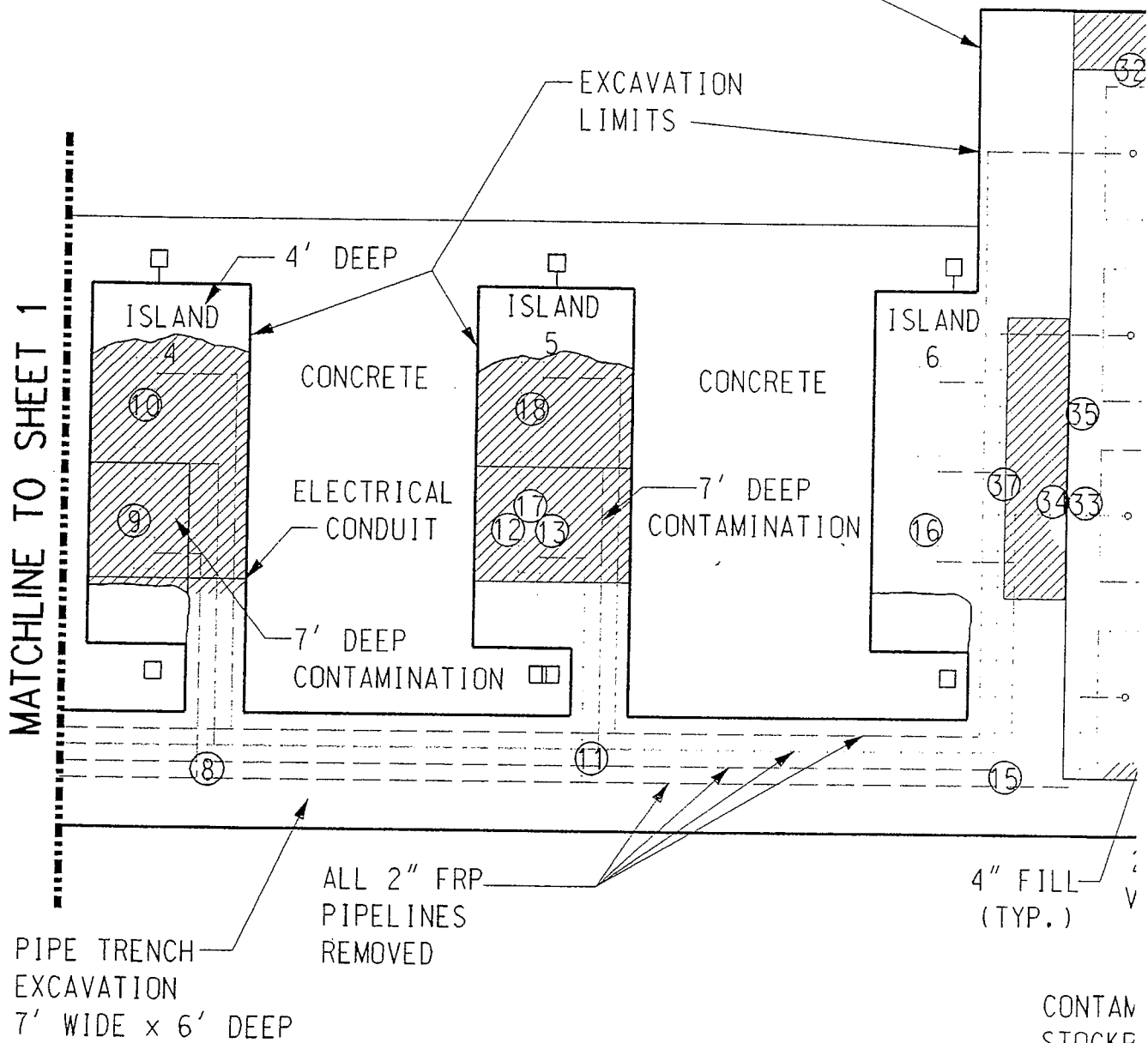
Analytical results for final confirmation samples exceed Hawaii Department of Health Tier 1 action levels. Field observations indicate that contaminated soil extends beneath the surface concrete slab in the area of the pump islands. The site will therefore require further investigation and remediation to justify clean closure.

Groundwater was encountered in the excavation at a depth of 15.5 feet. Field evidence indicated the potential presence of petroleum in the groundwater, and a monitor well was installed. Analytical results for groundwater were within DOH Tier 1 criteria.

A short-term release response for release number 980082 was filed May 15, 1998, and a long-term release response for release number 990033 was filed July 20, 1998. This *Site Assessment Report* serves as the long-term release response report required by the Department of Health. These underground storage tanks have been replaced by four 10,000-gallon steel aboveground storage tanks, which continue to supply gasoline to the facility.

MATCHLINE TO SHEET 1

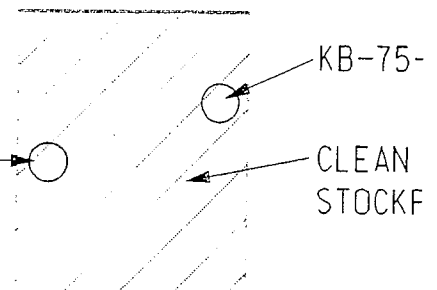
TANK AREA
EXCAVATION LIMITS
40' x 50' x 12' DEEP
(NOTE: EXCAVATION PERIMETER
OF TANK AREA WAS TRENCHED
TO 15')

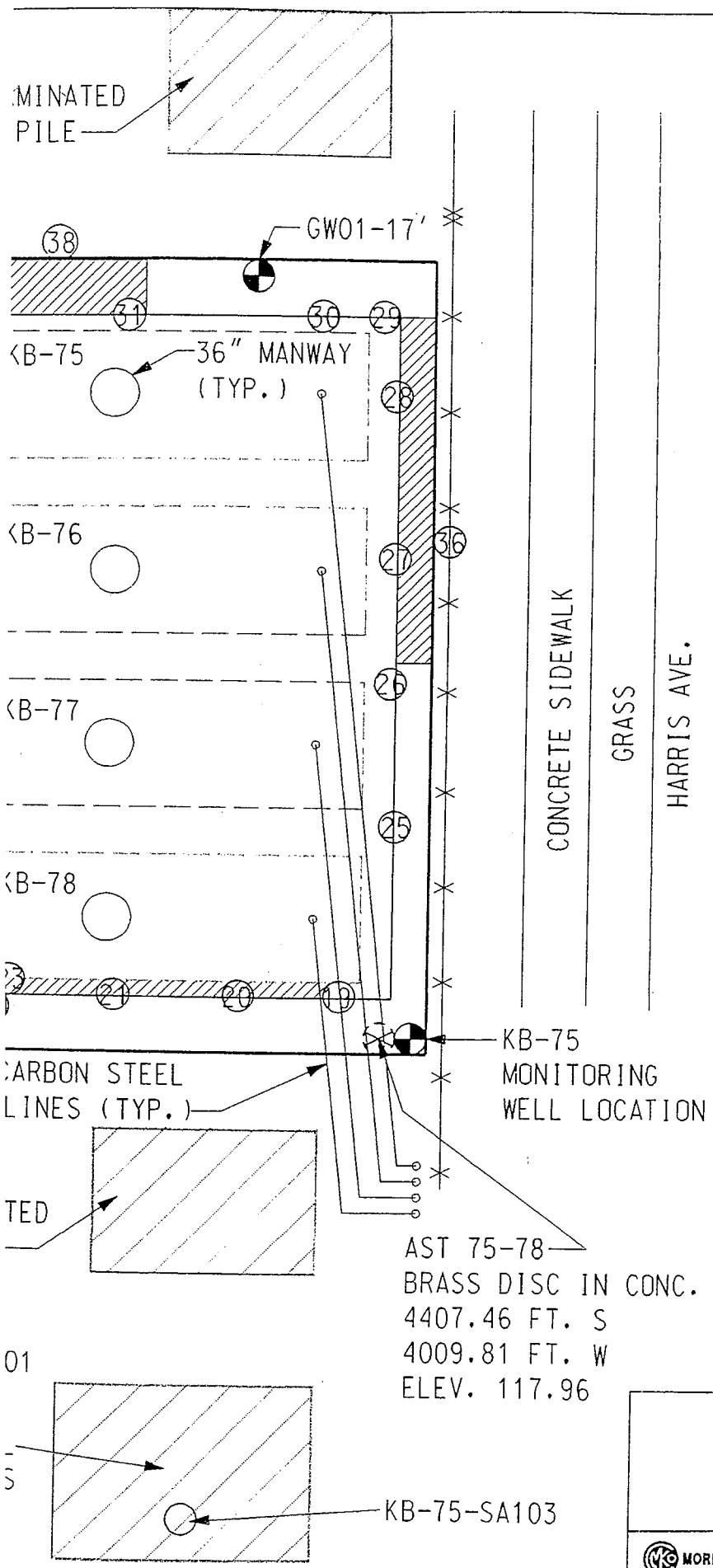


AREA OF
CONTAMINATED
SOIL REMOVAL

0ft 5 10 20ft
SCALE IN FEET

KB-75-SA102



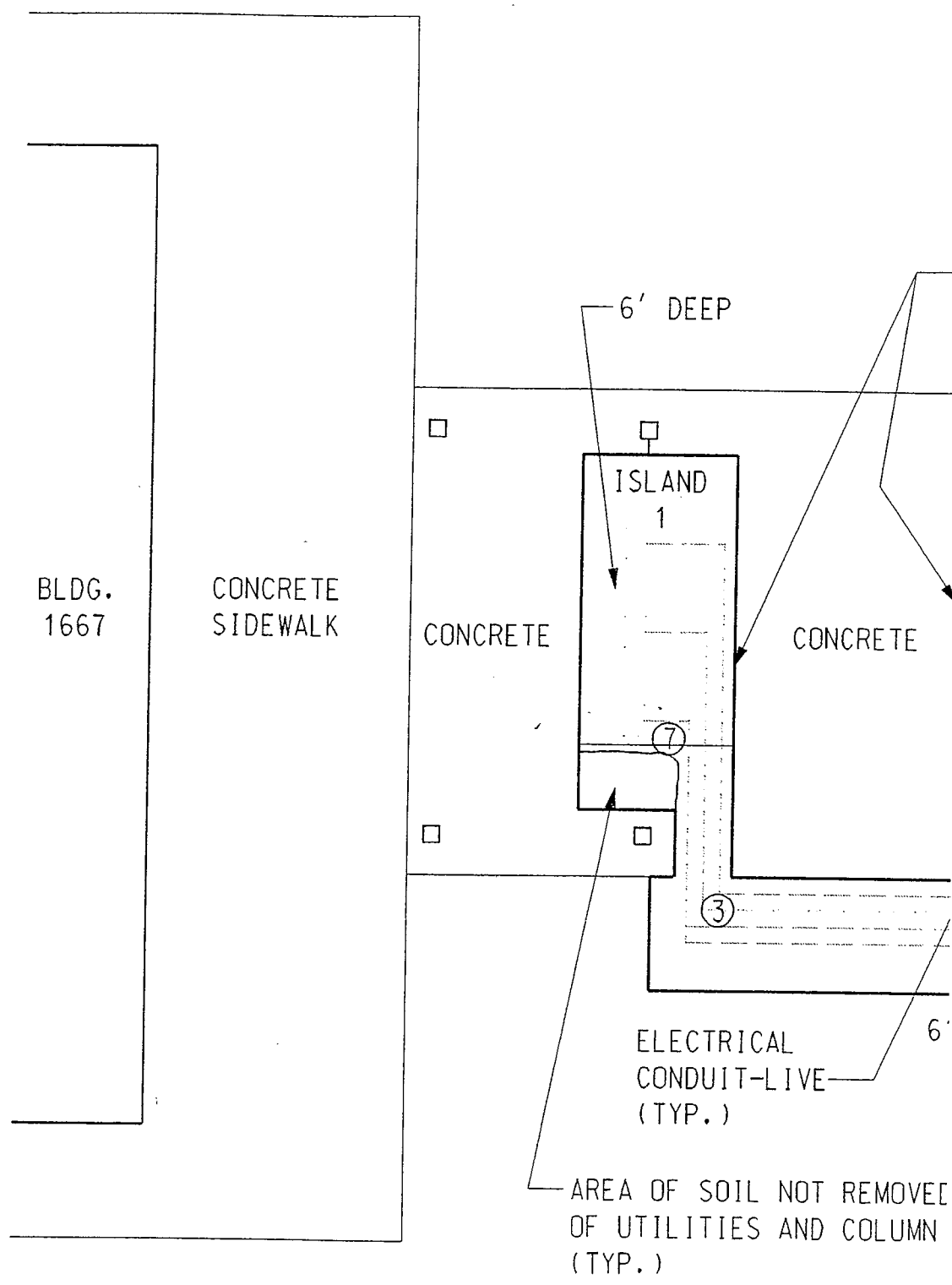


TANK KB-75 SAMPLE LOCATION LEGEND

SAMPLE NAME	DEPTH
⑧ KB-75-PC101	4.0 FT
⑨ KB-75-PC102	7.0 FT
⑩ KB-75-PC103	4.0 FT
⑪ KB-75-PC104	4.0 FT
⑫ KB-75-PC105	4.0 FT
⑬ KB-75-PC106	4.0 FT
⑮ KB-75-PC108	4.0 FT
⑯ KB-75-PC109	2.0 FT
⑰ KB-75-PC110	7.0 FT
⑱ KB-75-PC111	7.0 FT
⑲ KB-75-TC01	14.0 FT
⑳ KB-75-TC02	14.0 FT
㉑ KB-75-TC03	14.0 FT
㉒ KB-75-TC04	16.0 FT
㉓ KB-75-TC05	16.0 FT
㉔ KB-75-TC06	16.0 FT
㉕ KB-75-TC07	12.0 FT
㉖ KB-75-TC08	15.0 FT
㉗ KB-75-TC09	15.0 FT
㉘ KB-75-TC10	15.0 FT
㉙ KB-75-TC11	16.0 FT
㉚ KB-75-TC12	16.0 FT
㉛ KB-75-TC13	16.0 FT
㉜ KB-75-TC14	16.0 FT
㉝ KB-75-TC15	14.0 FT
㉞ KB-75-TC16	14.0 FT
㉟ KB-75-TC18	12.0 FT
㊱ KB-75-TC19	14.0 FT
㊲ KB-75-TC20	13.0 FT
㊳ KB-75-TC21	13.5 FT

MCBH KANEOHE UST-KB-75, 76, 77, & 78 SITE PLAN

MORRISON KNUDSEN CORPORATION <small>ENVIRONMENTAL SERVICES DIVISION 720 PARK BLVD. BOISE, ID 83707</small>	DRAWING NO:	FIGURE 2 / SHEET 2
	PROJECT NO.:	DATE:
	4577	AUGUST 1999



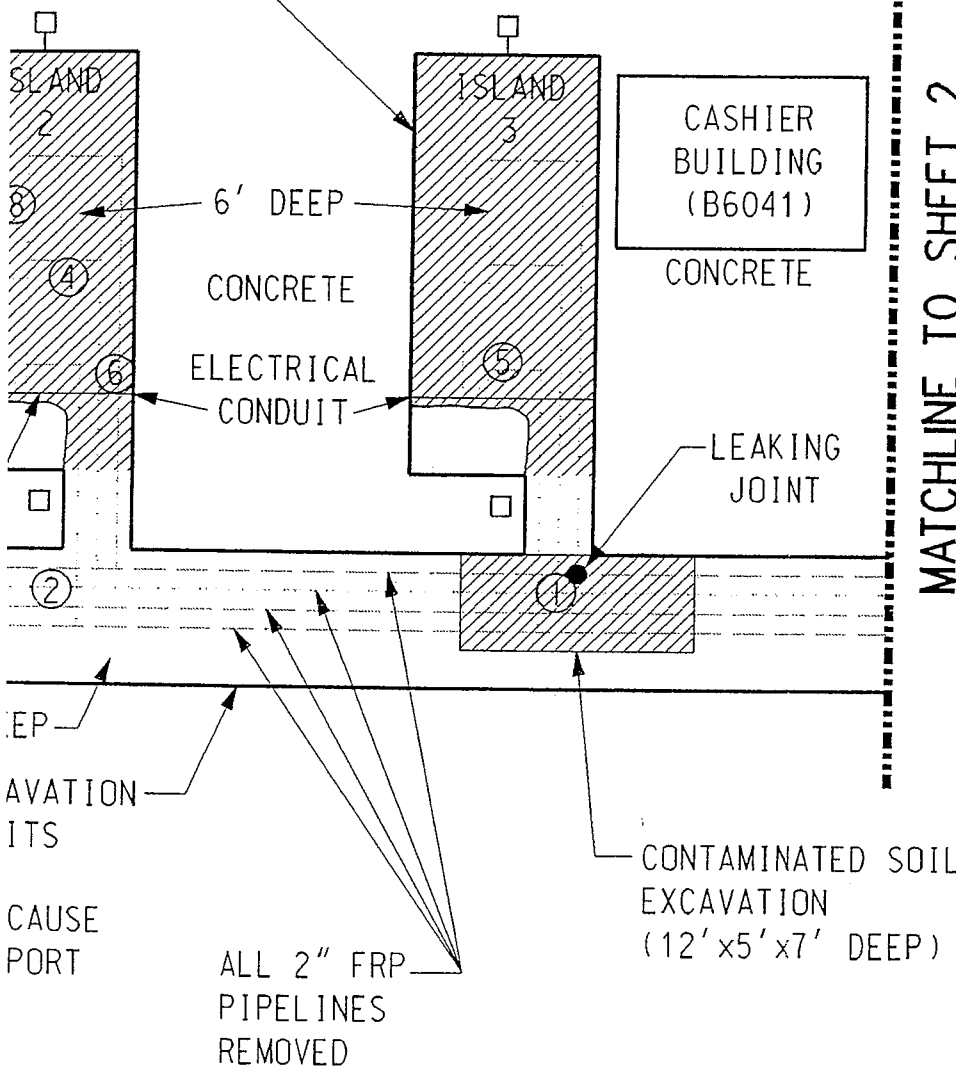
TANK KB-75

SAMPLE LOCATION LEGEND

SAMPLE NAME DEPTH

- | | | |
|---|------------|--------|
| ① | KB-75-PC01 | 7.0 FT |
| ② | KB-75-PC02 | 4.0 FT |
| ③ | KB-75-PC03 | 3.0 FT |
| ④ | KB-75-PC04 | 6.0 FT |
| ⑤ | KB-75-PC05 | 6.0 FT |
| ⑥ | KB-75-PC06 | 3.0 FT |
| ⑦ | KB-75-PC07 | 5.0 FT |
| ⑧ | KB-75-SB01 | 2.0 FT |

AVATION
ITS



MATCHLINE TO SHEET 2

AREA OF
CONTAMINATED
SOIL REMOVAL

MCBH KANE OHE
UST-KB-75, 76, 77, & 78
SITE PLAN

 MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES DIVISION
720 PARK BLVD. BOISE, ID 83707

DRAWING NO: FIGURE 2 / SHEET 1

PROJECT NO: 4577

DATE: JUNE 1999

FILE NO.: W04577\UST-KB75.DGN (06/22/99)

N

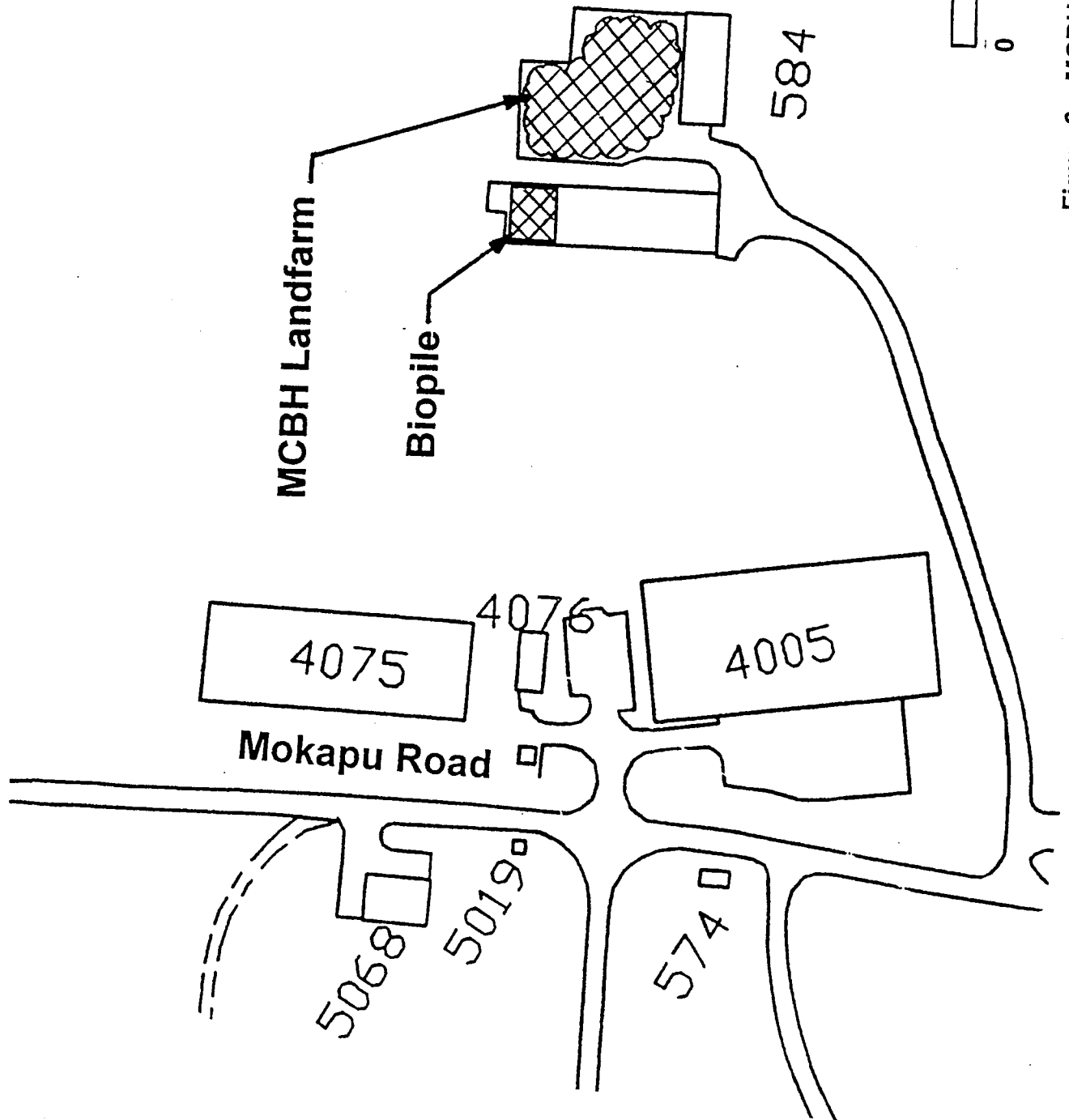


Figure 3. MCBH Landfarm Location Map

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REFERENCE FORM 11

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of the Navy, NAVFAC PACIFIC

Document Reviewed: *Closure Report, Underground Storage Tank (UST) KB-79. Prepared for USACE. Prepared by Morrison Knudsen Corporation. 5 October 1998.*

Pages Viewed: Executive Summary (See attached Executive Summary)

Date Viewed: April 2007

Results: Information incorporated into the ECP.

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CLOSURE REPORT

**UNDERGROUND STORAGE TANK KB-79
AT MARINE CORPS BASE HAWAII, KANEOHE, OAHU**

**STATE OF HAWAII DEPARTMENT OF HEALTH
FACILITY IDENTIFICATION NUMBER 9-102139-79**

**REMOVAL OF FUEL STORAGE TANKS
AT VARIOUS FEDERAL FACILITIES IN HAWAII**

**CONTRACT DACW68-94-D-0005
DELIVERY ORDER NUMBER 13**

FINAL

**prepared for
USACE-POD
FORT SHAFTER, HAWAII**

**by
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL GROUP**

October 5, 1998

**CLOSURE REPORT
UNDERGROUND STORAGE TANK KB-79
STATE OF HAWAII DOH IDENTIFICATION NUMBER 9-102139-79**

EXECUTIVE SUMMARY

Underground Storage Tank KB-79 (State of Hawaii Department of Health Facility Identification Number 9-102139-79) was a 550-gallon fiberglass waste oil tank located at Facility 1667, a Napa Auto service station at Marine Corps Base Hawaii Kaneohe, Oahu, Hawaii (Figures 1 and 2). The tank was excavated, cleaned, and disposed of during the period between May 22 and 30, 1997. The tanks and piping were in good condition. The tank passed a leak detection test in December 1991. Approximately $\frac{1}{4}$ cubic yard of contaminated soil, apparently the result of overfilling or a surface spill, was removed and transported to the Marine Corps Base Hawaii landfarm for treatment. A confirmed release notification was submitted to the United States Army Corps of Engineers, Pacific Ocean Division, on June 5, 1997, to be forwarded to the Department of Health. Groundwater was not encountered in the excavation.

All soil confirmation sample results were within Hawaii Department of Health Tier 1 action levels (as shown in Tables 4-3 and 4-4 of this *Closure Report*), and the site was backfilled and restored to its original condition. The site will remain under Marine Corps Base Hawaii control, and no land use changes are planned. Underground Storage Tank KB-79 is therefore closed, and no further action is required. Site closure and site assessment activities, including confirmation sampling, are documented in this *Closure Report*.

N

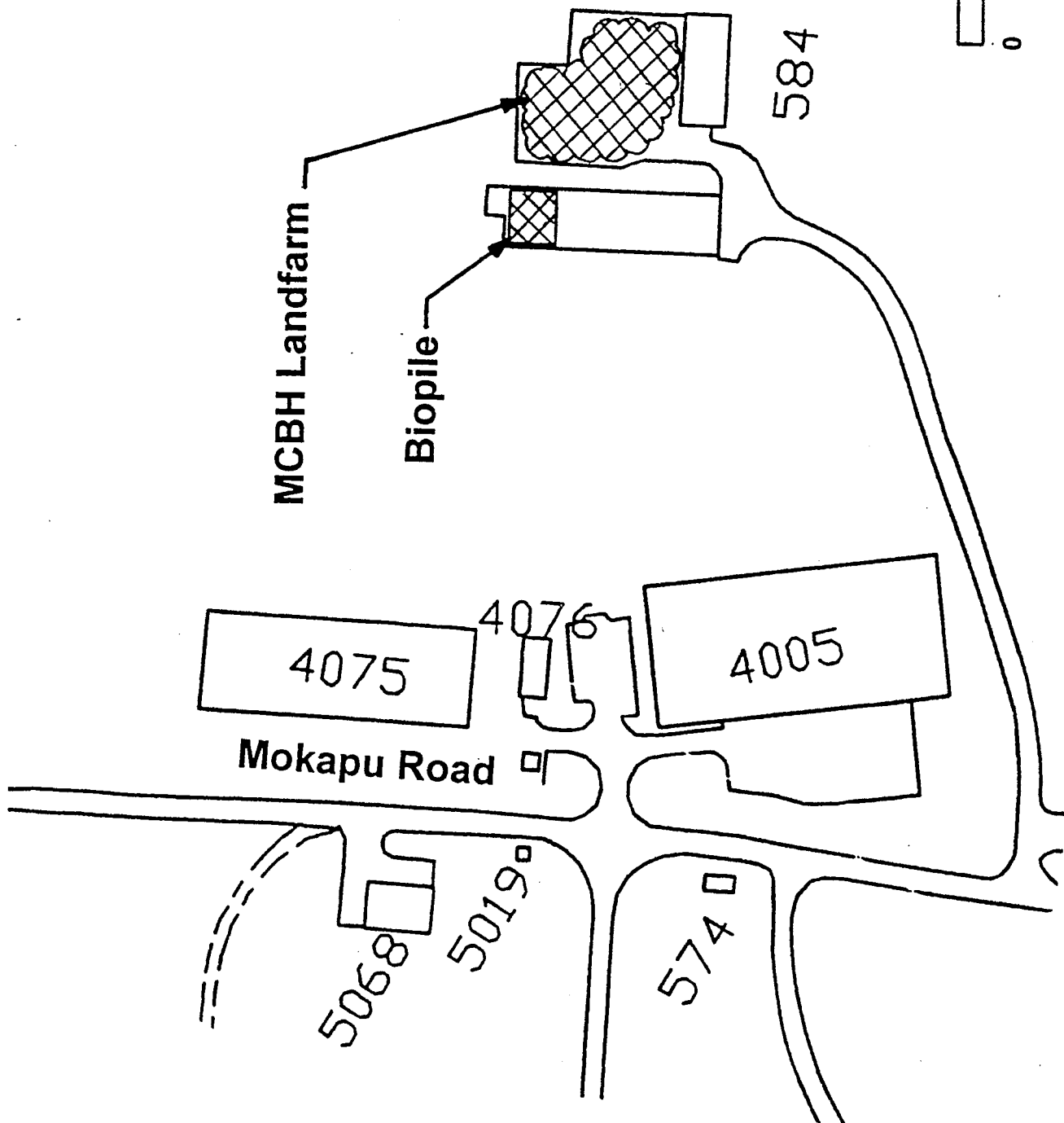
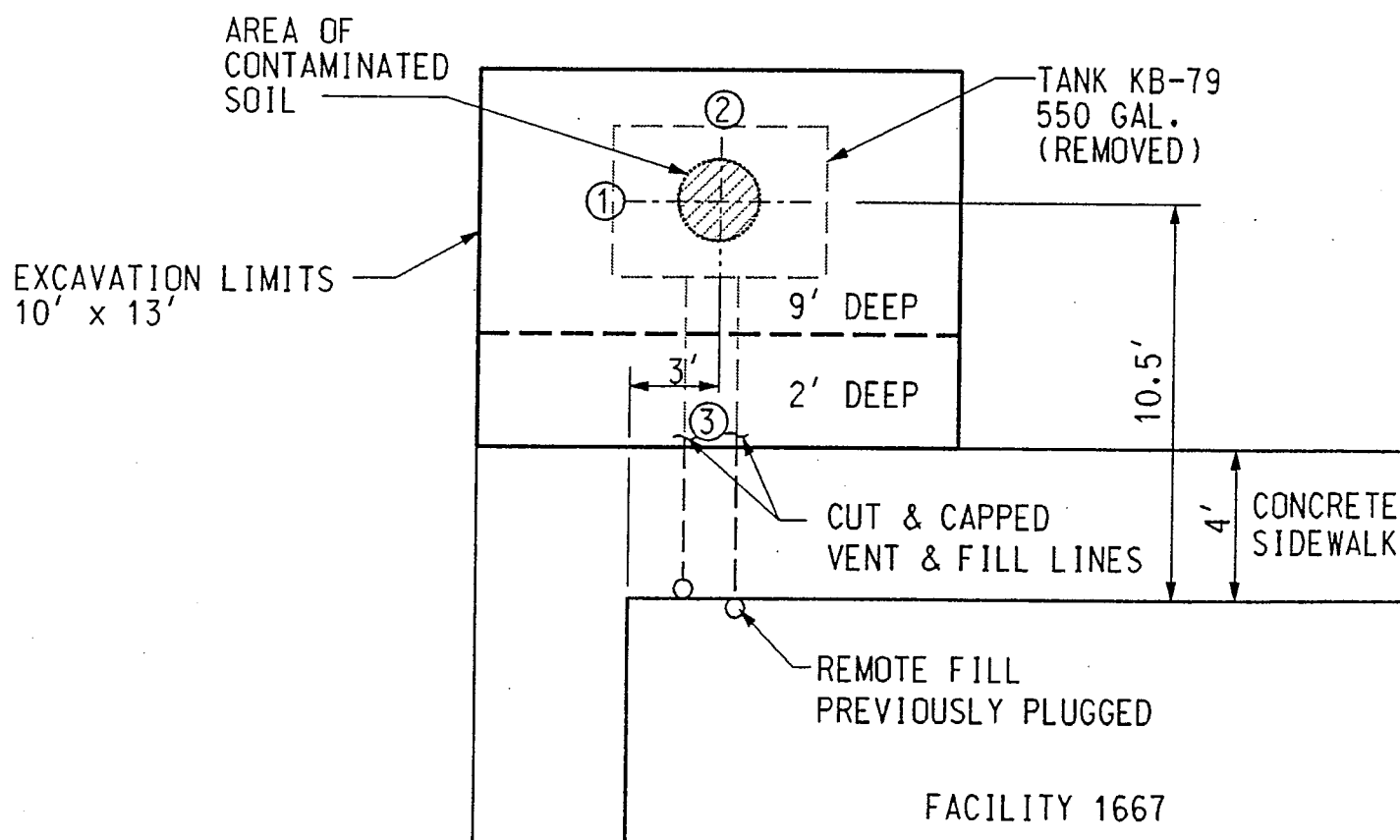
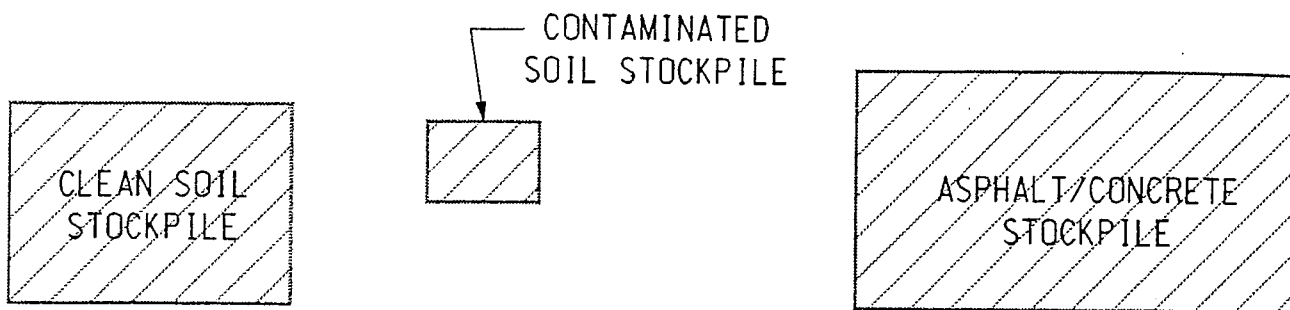


Figure 3. MCBH Landfarm Location Map



TANK KB-79

SAMPLE LOCATION LEGEND

SAMPLE NAME	DEPTH
① TC01	9.0 FT
② TC02	9.0 FT
③ PC01	2.0 FT

LEGEND

--- APPROXIMATE PIPELINE LOCATION

--- REMOVED DURING EXCAVATION

0ft 2.5 5 10ft

SCALE IN FEET

MCBH KANEOHE UST KB-79 SITE PLAN



MORRISON KNUDSEN CORPORATION

ENVIRONMENTAL SERVICES DIVISION

720 PARK BLVD. SUITE 100 BOSTON, MA 02117

DRAWING NO:

FIGURE 2

PROJECT NO.:

4577

DATE:

SEPTEMBER 1998

REFERENCE FORM 12

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Environmental Compliance Protection Department

Document Reviewed: *Closure Report, Underground Storage Tank KB-82 at Marine Corps Base Hawaii, Kaneohe, Hawaii.* Prepared for USACE. Prepared by Morrison Knudsen Corporation. 26 July 1999.

Pages Viewed: Entire Document (see attached Executive Summary)

Date Viewed: April 2007

Results: Closure completed and no further action recommended.

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CLOSURE REPORT

**UNDERGROUND STORAGE TANK KB-82
MARINE CORPS BASE HAWAII, KANEOHE, OAHU**

**STATE OF HAWAII DEPARTMENT OF HEALTH
FACILITY IDENTIFICATION NUMBER 9-102142-82**

**REMOVAL OF FUEL STORAGE TANKS
AT VARIOUS FEDERAL FACILITIES IN HAWAII**

**CONTRACT DACW68-94-D-0005
DELIVERY ORDER NUMBER 13**

FINAL

**prepared for
USACE-POD
FORT SHAFTER, HAWAII**

**by
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL GROUP**

July 26, 1999

**CLOSURE REPORT
UNDERGROUND STORAGE TANK KB-82
STATE OF HAWAII DOH FACILITY IDENTIFICATION NUMBER 9-102142-82**

EXECUTIVE SUMMARY

Underground Storage Tank KB-82 (State of Hawaii Department of Health Facility Identification Number 9-102142-82) was 280-gallon diesel tank located at Facility 4071, a sewage pumping facility, at Marine Corps Base Hawaii, Kaneohe, Oahu, Hawaii (Figures 1 and 2). The tank supplied diesel to an emergency generator. The tank was excavated and removed between October 16 and 23, 1997.

Approximately 6 weeks before Underground Storage Tank KB-82 was excavated, an excavator hit the tank with a backhoe during installation of a replacement aboveground storage tank. The tank sprang a leak, contaminating the nearby soil. Approximately 35 cubic yards of contaminated soil were excavated during the removal of the tank and transported to the Marine Corps Base Hawaii, Kaneohe, landfarm for treatment by bioremediation. A confirmed release notification was submitted to United States Army Corps of Engineers, Pacific Ocean Division, on December 4, 1997, to be forwarded to the State of Hawaii Department of Health. The confirmation samples collected following removal of the contaminated soil were within Hawaii Department of Health Tier 1 action levels. A sheen was noted on groundwater in the excavation, and a monitor well was installed. The results of a sample collected from the monitor well were also within Department of Health Tier 1 action levels. Therefore, no further action is required, and the site has been closed with no restrictions. Site closure and site assessment activities, including confirmation sampling, are documented in this *Closure Report*.

The site will remain under Marine Corps Base Hawaii, Kaneohe, control, and no land use changes are planned. The underground storage tank was replaced with an aboveground storage tank, which continues to supply diesel to the emergency generator in Facility 4071. Underground Storage Tank KB-82 is therefore closed, and no further action is recommended. Site closure and site assessment activities, including confirmation sampling, are documented in this *Closure Report*.

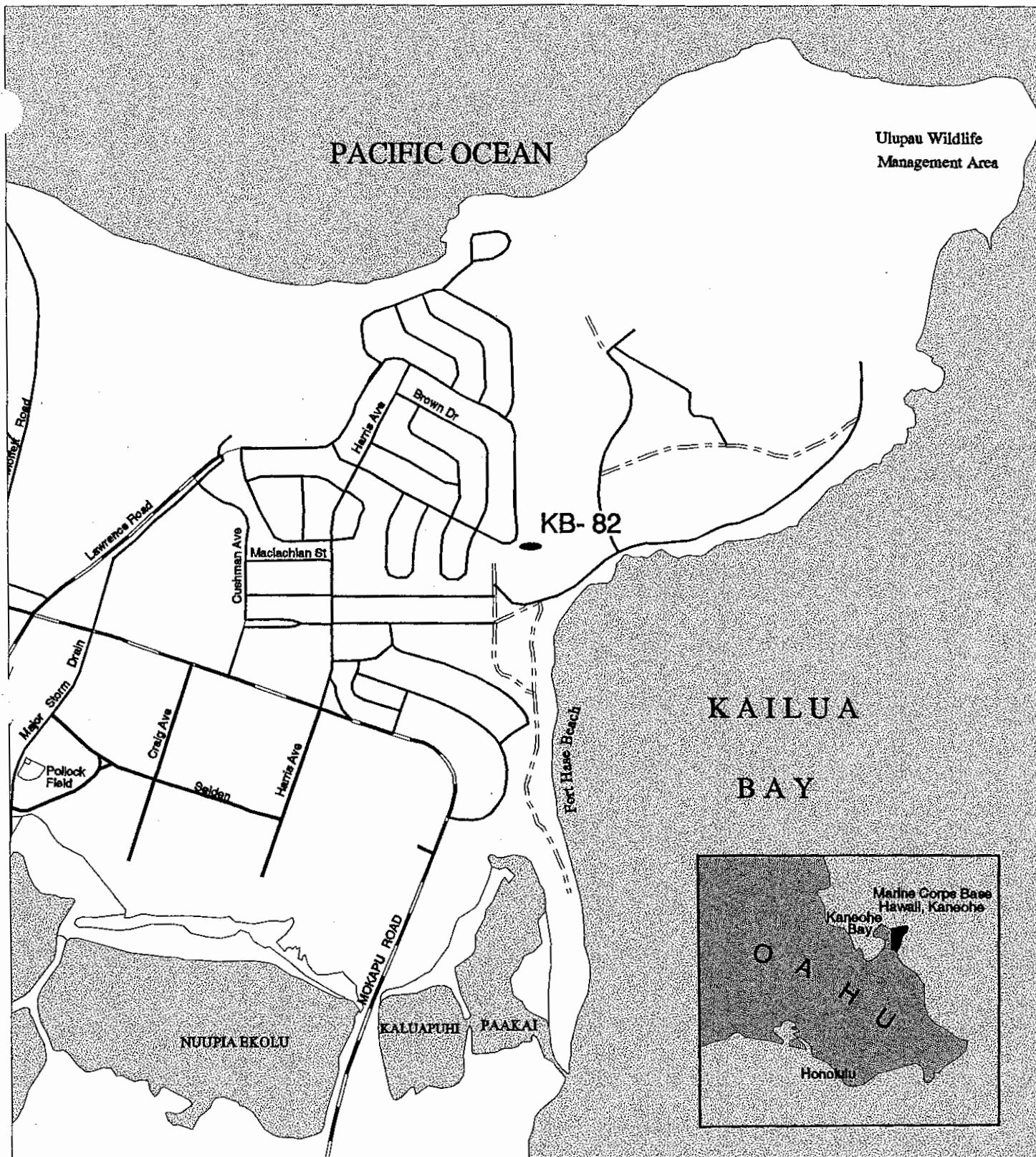
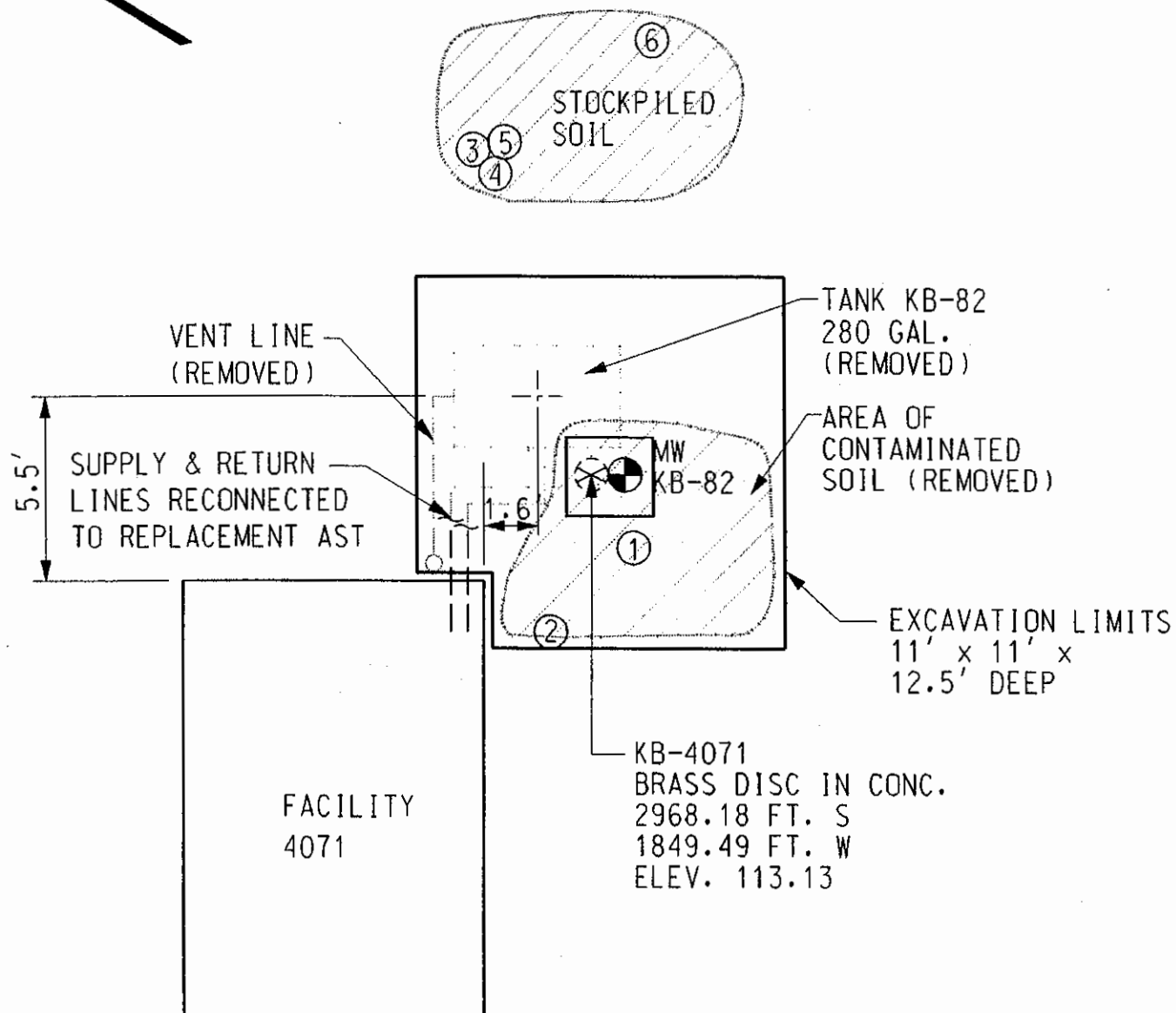


Figure 1
UST KB-82 Vicinity Map


Marine Corps Base Hawaii, Kaneohe
Oahu, Hawaii



TANK KB-82
SAMPLE LOCATION LEGEND
SAMPLE NAME DEPTH

- | | | |
|---|------------|---------|
| ① | KB-82-TC01 | 7.0 FT |
| ② | KB-82-TC02 | 12.0 FT |
| ③ | KB-82-SC01 | |
| ④ | KB-82-SC02 | |
| ⑤ | KB-82-SC03 | |
| ⑥ | KB-82-SC04 | |

LEGEND

--- APPROXIMATE PIPELINE LOCATION
REMOVED DURING EXCAVATION
 MONITOR WELL

0ft 2.5 5 10ft
SCALE IN FEET

MCBH KANEOHE
UST KB-82
SITE PLAN



MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES DIVISION
720 PARK BLVD. BOISE, ID 83707

DRAWING NO: FIGURE 2

PROJECT NO: 1577 DATE: APRIL 1990

REFERENCE FORM 13

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Environmental Compliance Protection Department

Document Reviewed: *Closure Report, Underground Storage Tank KB-99 at Marine Corps Base Hawaii, Kaneohe, Hawaii.* Prepared for USACE. Prepared by Morrison Knudsen Corporation. 30 December 1994.

Pages Viewed: Entire Document (see attached Executive Summary)

Date Viewed: April 2007

Results: Closure completed and no further action recommended.

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UNDERGROUND STORAGE TANK (UST)

CLOSURE REPORT

**REMOVAL OF UNDERGROUND STORAGE TANKS
at VARIOUS U.S. ARMY FACILITIES, HAWAII
Contract No. DACW45-90-D-0029, D.O. No. 5**

MK Report No. 4277 - CR - 019
UST ID No. KB-99
Facility : Dog Run Area
Installation : Marine Corp Base, Hawaii

U.S. Army Corps of Engineer Project Manager: (b) (6)
MK Project Manager: (b) (6)

MORRISON KNUDSEN CORPORATION
Environmental Service Division
7100 East Belleview Avenue
Englewood, Colorado 80111
(808) 944-6633, (303) 793-5000

Date prepared: December 30, 1994

EXECUTIVE SUMMARY

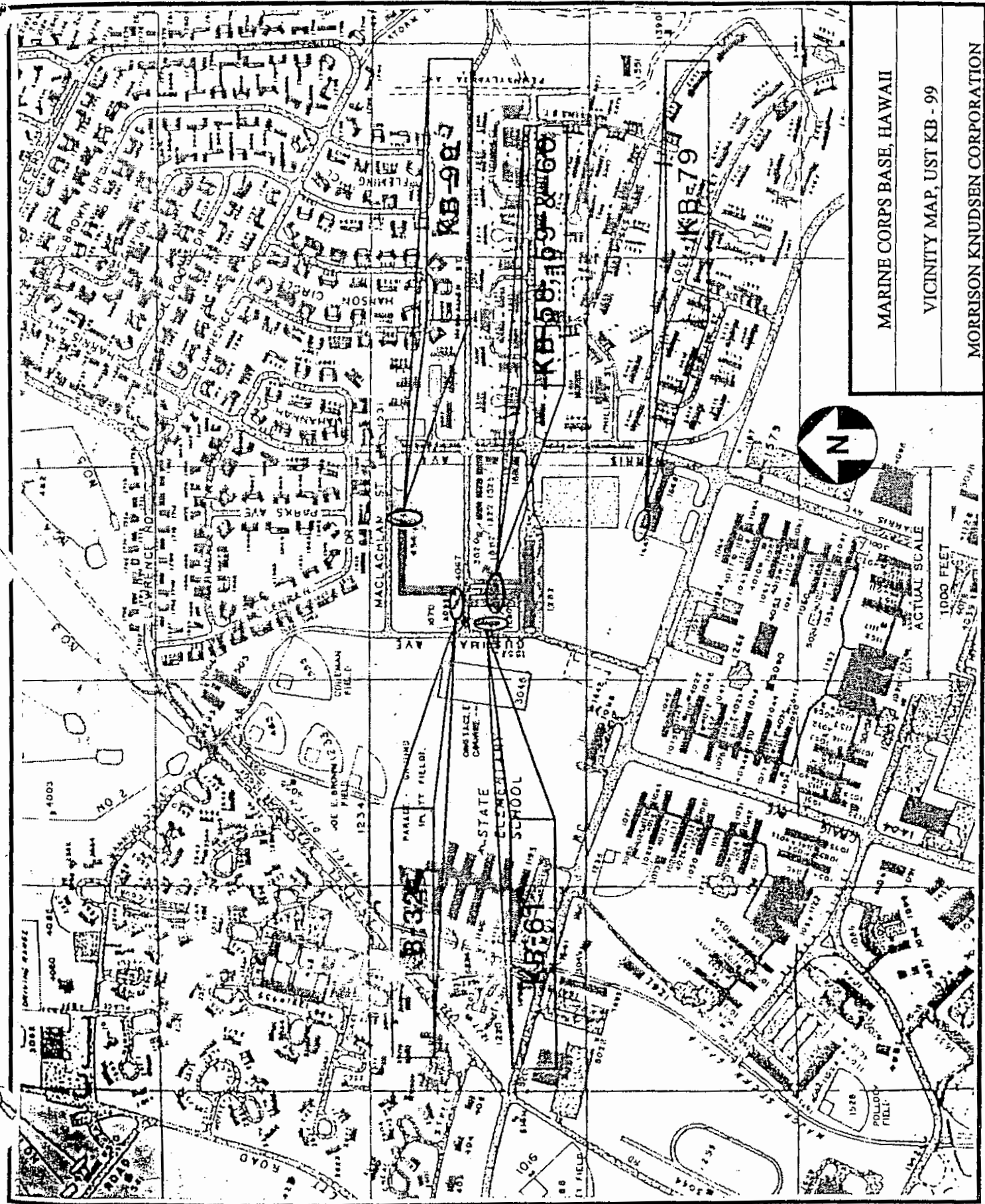
Morrison Knudsen Corporation, Environmental Services Division (MK) received Contract No. DACW-45-90-D-0029, Delivery Order No. 5, Removal of Underground Storage Tanks at Various U.S. Army Facilities, Hawaii from the U.S. Army Corps of Engineers. Oversight of the project was transferred to COE Pacific Ocean Division. This closure report summarizes the activities associated with the removal, closure, and surface restoration of a 500 gallon underground storage tank located near a fenced dog run area in Marine Corps Base Hawaii.

The UST was identified as KB-99. The UST system consisted of one 500 gallon steel tank, 2" vent line, 2" product line, 2" fill line, concrete oil/water separator and a grit trap. The product stored was a mixture of waste oil and water, and the UST was out of service at the time of removal. The tank was installed in 1986. Its approximate deactivation date was 1991. The tank was exclusively used by Marine Corp Base, Hawaii, as a product storage tank (used oil) generated by a field maintenance shop.

Excavation for the UST Removal began, and was completed, on September 19, 1994. The tank was located next to a concrete wash rack area, under a grass, 31' from Maclachlan street. There were no access problems. Eight bollards were removed and disposed. No overhead interferences were encountered during excavation. An abandoned 4" cast iron sanitary sewer pipe was encountered and removed. The structural condition of the tank was good. No corrosion patches or holes were observed on the tank walls. No confirmed release actions were taken nor needed.

One closure sample was collected beneath the tank, and one beneath the oil/water separator box. The soil was analyzed and determined to be 'not ignitable'. Concentrations of Acenaphthene, Benzo(a)pyrene, Fluoranthene, Napthalene, Tetrachloroethene, Trichloroethane, Polychlorinated Biphenyls and eight RCRA metals were below DOH's interim recommended clean-up criteria for soil.

The planned use for the site is a day care center for military dependents. Final restoration work was completed on September 23, 1994. The site was backfilled and compacted to match the original surface features. A clean closure was concluded, and no additional work is recommended for the former UST site.



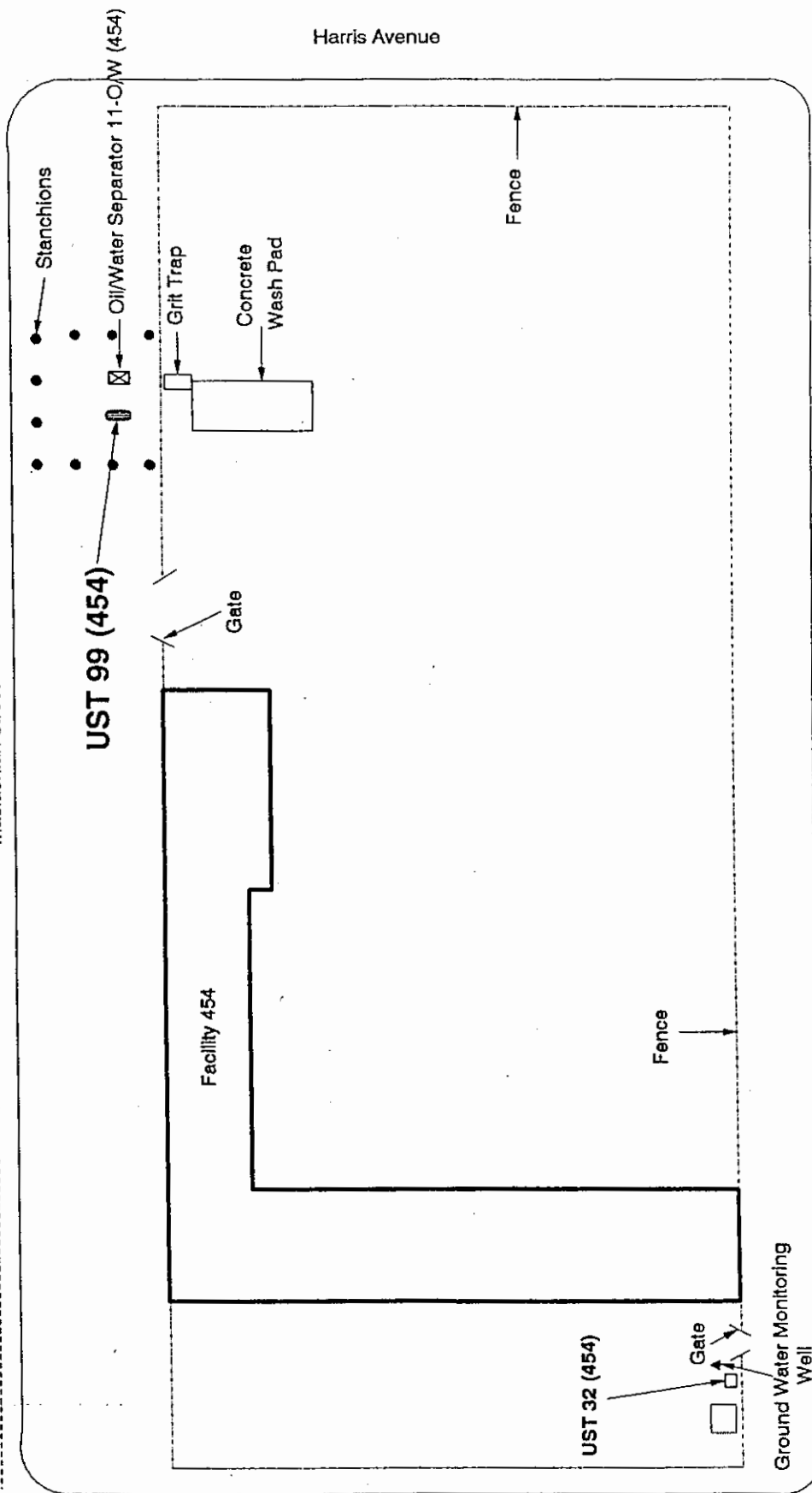
MARINE CORPS BASE, HAWAII

VICINITY MAP, UST KB - 99

MORRISON KNUDSEN CORPORATION

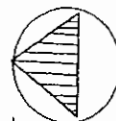
**MCAS Kaneohe Bay
UST 99 (454)**

Maclachlan Street



Middleburgh Street

N



Grid J-11

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REFERENCE FORM 14

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *Asbestos Activity Summary, MCB Kaneohe*. Prepared by Department of the Navy, Navy PWC, Energy and Environmental Engineering Branch, Norfolk, VA. August 1997

Pages Viewed: Entire Document (See attached sections)

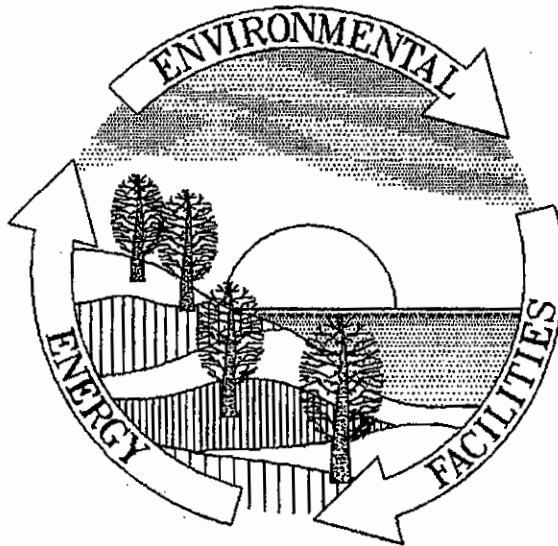
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ASBESTOS ACTIVITY SUMMARY

**MCB KANEOHE
KANEOHE, HI**



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AUGUST 1997

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EXECUTIVE SUMMARY

The Department of the Navy, attentive to the safety and well-being of its personnel and their families, has initiated a worldwide program to assess Navy and Marine Corps Family Housing for asbestos. Naval Facilities Engineering Command (NAVFACENGCOM) has retained Public Works Center (PWC) - Norfolk, Virginia to develop and manage the environmental assessment. The Navy Family Housing Lead Based Paint/Asbestos Inventory Program is outlined in a 09 November 1992 letter from Commander, Naval Facilities Engineering Command.

The assessment provides strategies to ensure the safety of residents and workers. The National Emission Standards for Hazardous Air Pollutants (NESHAPS [40 CFR 61 PART M]) and the Asbestos Hazard Emergency Response Act (AHERA [40 CFR 763]) specify the legislative and statutory requirements for the assessment.

United States Environmental Protection Agency (USEPA) Certified Inspectors performed inspections following USEPA and Naval Facilities Engineering Service Center (NFESC) methodology and procedures. The assessment objectives were to:

- Determine the location of asbestos-containing materials (ACM)
- Evaluate the potential hazards due to the presence of the ACM
- Prioritize the ACM hazards and specify an action response per associated time-frame
- Estimate costs for action responses

This document supplements individual community Asbestos Management Plans for MCB Kaneohe with program background information, testing protocol and practices, and reference material. Each individual management plan provides the inspection parameters, floor plans, test findings and analysis, and recommendations for each specific community. The provided Document Package contains the referenced regulatory standards and asbestos management documents. It also assists in the development and implementation of a program to control ACM in-place while minimizing potential hazards.

A total of 129 suspect asbestos homogeneous areas were established and analyzed during the asbestos assessment of MCB Kaneohe. Fifty-two (52) of these homogeneous areas are ACM. One presents a moderate to high potential hazard and requires a short-term action response to minimize the hazard. The Asbestos Survey Summary section of this document provides a brief description of the survey findings and recommended action responses for each housing community of MCB Kaneohe. For community specific results, technical details, and a breakdown of all conclusions, consult each respective community Asbestos Management Plan.

The estimated short-term hazard minimization cost for the ACM located in MCB Kaneohe Housing is \$46,630. The estimated cost to develop an effective and proactive asbestos operation and maintenance (O&M) program to control ACM in-place while minimizing hazards is \$7,684. The estimated annual cost to maintain the O&M program is \$82,928. The Cost Estimates section of this document provides a brief overview of the individual costs for each housing community of MCB Kaneohe. For specific community cost details, consult the respective Community Asbestos Management Plan.

The costs for development, implementation, and execution of the O&M Programs described in the MCB Kaneohe Asbestos Activity Summary and Lead Activity Summary documents were calculated independent of one another. Actual implementation and annual execution costs can be reduced if the LBP and Asbestos O&M Programs are established simultaneously and operated in a similar fashion. Combining the annual assessment required in each of these programs, and phasing this combined assessment with regularly scheduled maintenance inspections will greatly reduce the annual O&M costs for these programs.

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PROGRAM INFORMATION AND PROTOCOL

PROGRAM HISTORY

Naval Facilities Engineering Command (NAVFACENGCOM) has retained Public Works Center (PWC) - Norfolk, Virginia to develop and manage the environmental assessment. The assessment provides strategies to ensure the safety of residents and workers.

The Navy Family Housing Lead Based Paint/Asbestos Inventory Program is outlined in a 09 November 1992 letter from Commander, Naval Facilities Engineering Command.

The National Emission Standards for Hazardous Air Pollutants (NESHAPS [40 CFR 61 PART M]) and the Asbestos Hazard Emergency Response Act (AHERA [40 CFR 763]) specify the legislative and statutory requirements for this assessment.

The United States Environmental Protection Agency (USEPA) Certified Inspectors performed comprehensive inspections to locate and assess the condition of asbestos-containing materials (ACM). The inspection follows USEPA and Naval Facilities Engineering Service Center (NFESC) methodology and procedures. These guidelines predicate testing of the entire community as a homogeneous area to allow for statistical sampling.

BACKGROUND

Asbestos is a natural silicate mineral that occurs in a fibrous form. It is mined from the earth in rock form then crushed and milled to extract the asbestos fibers.

The most common asbestos types are chrysotile, amosite, and crocidolite. Asbestos fibers possess a high tensile strength, light weight, excellent resistance to heat and chemicals, and are low in conductivity. Due to these properties, asbestos was a common additive in insulation and building materials.

The presence of asbestos-containing material does not automatically constitute a health hazard. A hazard only exists if the material is friable (able to be pulverized by hand pressure) and damaged or deteriorated to the point of releasing asbestos fibers.

Inhalation and ingestion are the two routes for asbestos fibers to enter the body. Asbestos fibers are extremely small, as small as thousandths of a micron (1 micron is approximately 1/25,000 of an inch), and become airborne quite easily. By way of inhalation, airborne asbestos fibers are the largest threat of exposure. The body is not capable of destroying the asbestos fibers, which pose the risk of contributing to the development of asbestos, lung cancer, and other diseases. It is important to note that no known safe exposure limit to asbestos exists, as studies indicate wide variations in the correlation between exposure and development of disease.

TESTING PROCEDURES

Sampling Objectives

The inspection process focuses on identifying suspect asbestos-containing materials by homogeneous area, and assessing the physical condition of the material. A homogeneous area is an area containing material that is uniform in color and texture, installed around the same time, and appears to be identical in every respect. Inspectors identify homogeneous areas and generate floor plans depicting the location and size of each. Refer to Appendix I of the individual Asbestos Management Plan for the floor plans of that community.

The inspection includes materials that are open and/or accessible, and generally does not include materials within sealed areas, such as electrical components or piping inside walls. The following are some of the common materials inspected. Refer to Appendix II for a more complete listing of suspect materials.

- Ceilings; spray-on acoustic, tiles
- Flooring; asphalt/vinyl tiles, mastic/sealer
- Insulation; HVAC, surfacing, piping/plumbing
- Roofing; felt, flashing, mastic/waterproofing
- Walls; plaster, sheeting, cement board, sealant

Bulk samples of each suspect asbestos-containing material are collected. USEPA guidelines specify the number of samples required to properly represent a homogeneous area. The following table indicates the number of samples required to maximize the chance of detecting and

identifying ACM based on amount of material present. The recommended numbers of asbestos samples for each homogeneous area within each community were routinely collected during the survey. An accredited laboratory analyzes the bulk samples to determine if the homogeneous area is an ACM.

NUMBER OF ASBESTOS SAMPLES TO BE TAKEN	
SAMPLING SPECIFICS	MINIMUM SAMPLE NO.
Surfacing ACM	
Less than 1,000 square feet	3
1,000 to 5,000 square feet	5
Greater than 5,000 square feet	7
TSE ACM	
per homogeneous area	3
per patch (<6 ft or <6 ft ²)	1
valve or fitting (i.e., tees elbows, etc.) mud, and cement	1
Miscellaneous ACM	
per homogeneous area	3

Data Analysis

The method utilized for laboratory analysis of suspect asbestos-containing material samples is Polarized Light Microscopy (PLM), as recommended by EPA. A sample tested and shown to have greater than or equal to one percent (1%) asbestos is ACM. Consequently, the confirmed material's entire homogeneous area is ACM.

A ranking system developed by Naval Facilities Engineering Service Center (NFESC/NEESA) determines the appropriate action response for the ACM. In the ranking system algorithm, the material condition and location of each ACM homogeneous area aids in deriving the hazard potential of the ACM.

REFERENCE DOCUMENTS

Appendix III contains a list of reference material regarding the policy of the Navy Family Housing Lead Based Paint/Asbestos Inventory Program and regulations for asbestos control. Also listed are various documents concerning the inspection, control, and abatement of asbestos. Provided to each activity is a document package that contains applicable federal/state regulations and guidance documents that support all survey information and recommendations.

All aspects of the individual community management plans utilize the respective governing regulatory documents as a basis for action. Although these documents often contradict one another, this Activity Summary combined with the accompanying management plans provides a safe and cost effective means to resolve environmental issues related to asbestos hazards.

ACTIVITY DESCRIPTION

A summary of MCB Kaneohe inspection is in Table 1. Provided in each community management plan are floor plans along with the list of the homes inspected.

- Activity UIC Number: M00318 ¹
- Inspection Dates: May - November 1996

Table 1 - Inspection Parameters			
Housing Type	Total # of Units	# of Units Inspected for Asbestos	Year(s) of Construction
Hilltop (0399)			
Single Family	23	20	1941
NGO Row (0400)			
Duplexes	8	8	1941
Hillside (0401)			
Duplexes	6	6	1957
Flats	4	4	1957
Manning Court (0402)			
2 Bedroom Flats	12	7	1964
3 Bedroom Flats	24	20	1959
Mokapu Court (0403)			
Duplexes	8	8	1957
Single Family	1	1	1957
Capehart (0404)			
Duplexes	645	56	1959
FY63 Housing (0405)			
Multiplexes	150	48	1964
FY64 Housing (0406)			
Townhouses	100	46	1965
FY65 Housing (0407)			
Multiplexes	230	52	1966
Rainbow (0408)			
Apartments	320	53	1974

Table 1 - Inspection Parameters

Housing Type	Total # of Units	# of Units Inspected for Asbestos	Year(s) of Construction
Ulupau (0409)			
Apartments	350	54	1976
Nani Ulupau (0410)*			
Multiplexes	40	5*	1991
Totals	1921	388	
CDC's & Community Centers (0411)			
Hilltop CDC	2	2	1952
Lawrence St. CDC	1	1	1942
Youth Center	1	1	n/a
Totals	4	4	

¹See Definitions - Appendix I.

Note: community numbers assigned by PWC Norfolk appear in parentheses next to community names. See Definitions - Appendix I for more information.

* Nani Ulupau was constructed after 1984, therefore, the community was inspected under a modified protocol as directed by Naval Facilities Engineering Command. This protocol dictates that asbestos, dust, and soil will be inspected using the number of units in accordance with the dust and soil inspection table published by HUD. There will be no paint inspections in these units.

ASBESTOS SURVEY SUMMARY

FINDINGS AND ANALYSIS

Hilltop

- Pipe Insulation, HA#8 - Attic
Hazard priority level 1, Short term action required
- Linoleum & Mastic: HA#1, 2, 4, 9, 11, & 13 - Throughout
Hazard priority level 5, O&M required

NCO Row

- Vinyl Floor Tile & Mastic, HA#2 - Bedroom 2, Hallway, Living
Hazard priority level 5, O&M required
- Sink Undercoating, HA#5 - Kitchen
Hazard priority level 5, O&M required
- Vinyl Floor Tile & Mastic, HA#6 - Living
Hazard priority level 5, O&M required

Hillside

- Floor Tile & Mastic, HA#2 - Bedroom 1-4, Bath 2, Living, Hall, Kitchen, Porch
Hazard priority level 5, O&M required
- Sink Undercoating, HA#3 - Kitchen
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#6 - Hall, Living, Bedroom 1-3
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#7 - Porch, Kitchen
Hazard priority level 5, O&M required
- Built-up Roof, HA#8 - Carport
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#10 - Bath 1 (closet)
Hazard priority level 5, O&M required

Manning Court

- Floor Tile & Mastic, HA#1
Hazard priority level 5, O&M required
- Sink Undercoating, HA#3
Hazard priority level 5, O&M required
- Built-up Roof, HA#5 - Assumed Positive
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#7
Hazard priority level 5, O&M required

Mokapu Court

- Floor Tile & Mastic, HA#2
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#3
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#4
Hazard priority level 5, O&M required
- VFT & Mastic, HA#6
Hazard priority level 5, O&M required

Capehart

- Floor Tile & Mastic, HA#2 - Throughout
Hazard priority level 5, O&M required
- Sink Undercoating, HA#6 - Kitchen
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#7 - Bath 2, Porch
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#8 - Porch, Bath 1-2
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#9 - Throughout
Hazard priority level 5, O&M required
- Window Glazing, HA#10 - Exterior
Hazard priority level 5, O&M required
- Rolled Roofing/Roof Tar, HA#13 - Carport
Hazard priority level 5, O&M required

- Floor Tile & Mastic, HA#14 - Bath 2, Porch
Hazard priority level 5, O&M required
- Transite Pipes, HA#15 (ASSUMED POSITIVE) - Exterior
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#19 - Bath 1
Hazard priority level 5, O&M required
- Linoleum & Mastic, HA#20 - Bath 1
Hazard priority level 5, O&M required

FY63 Housing

- Floor Tile & Mastic, HA#1
Hazard priority level 5, O&M required
- Built-up roof, HA#4 - ASSUMED POSITIVE
Hazard priority level 5, O&M required

FY64 Housing

- Built-up Roof, HA#2 - Carport
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#3 - Bath 1, Bedroom 1-3, Hallway 1-2, Living
Hazard priority level 5, O&M required
- Linoleum & Mastic, HA#4 - Hallway 1, Kitchen, Bathroom 1-2
Hazard priority level 5, O&M required

FY65 Housing

- HA #1: Floor Tile & Mastic
Hazard priority level 5, O&M required
- HA #4: Rolled Roof - Assumed Positive
Hazard priority level 5, O&M required
- HA #5: Built-up Roof - Assumed Positive
Hazard priority level 5, O&M required

Rainbow

- Floor Tile & Mastic, HA#1 - Throughout
Hazard priority level 5, O&M required

Ulupau

- Floor Tile & Mastic, HA#1 - Throughout
Hazard priority level 5, O&M required
- Shingles & Roof Felt, HA#3 - Exterior
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#5 - Bedroom 2, Kitchen, Laundry, Bathroom
1
Hazard priority level 5, O&M required
- Floor Tile & Mastic, HA#6 - Dining, Hallway 1, Living, Bedroom 1
Hazard priority level 5, O&M required

Nani Ulupau

None of the materials sampled were found to contain asbestos.

Hilltop CDC

- Rolled Roofing, HA#11 - Exterior (Assumed Positive)
Hazard priority level 5, O&M required

Lawrence Street CDC

- Linoleum & Mastic, HA#2 - Hourly Care 1, Office 2, Preschool 1-4
Hazard priority level 5, O&M required
- Roof Felt, HA#10 - Exterior (Assumed Positive)
Hazard priority level 5, O&M required
- Built-up Roof, HA#20 - Exterior (Assumed Positive)
Hazard priority level 5, O&M required

Youth Center

None of the materials sampled were determined to be ACM.

RECOMMENDATIONS

Response actions are sorted by four time frames: short-term, interim control, renovation, and demolition. Refer to Appendix II for further clarification of these time frames.

Short-Term

Remove and replace all confirmed ACM identified as a moderate to high hazard potential. Implement an Operations and Maintenance (O&M) Program to manage and control all ACM until abated. Include an appropriate resident notification and education package. Implement controls that will reduce occupant and worker exposure (limit room/location access) until abatement of ACM (standard O&M practices). Include upgrades for mechanical, HVAC, water service systems, etc. affected by abatement actions. Clear and remove all debris from these areas.

Interim Control

Below is a summary of elements to consider for development of an O&M Program as recommended by the National Institute of Building Sciences (NIBS) publication, Asbestos Operations and Maintenance Work Practices. This information is provided for those lacking a proficient background in managing asbestos or an understanding of what is involved with the design and execution of an effective asbestos O&M Program.

- Asbestos Program Manager appointment and training
- Copies of applicable regulations and guidance documents
- Occupant notification/communication program
- O&M worker, supervisor, and competent person assignments and training program
- Work control/inspection/permit system
- Periodic surveillance program
- Recordkeeping program
- Hazard communication program
- Worker protection program (personal protective equipment)
- Respiratory protection program

- Medical surveillance program
- ~~Asbestos fiber release episode response program~~
- Air monitoring program
- Waste disposal program
- Confined space program
- Safety program for other hazards

O&M work practices, including removal techniques, vary according to the type of ACM and the conditions of the specific task. The following steps outline general O&M practices to manage ACM in place and reduce potential hazards:

1. Visually inspect confirmed ACM at convenient times such as occupant turn-over for signs of damage or deterioration.
2. Repair/replace damaged or deteriorated ACM, utilizing appropriate O&M work practices and procedures. Reduce or contain materials, dust, or fiber release resulting from work performed on or near ACM.
3. Inform and educate occupants and maintenance workers regarding the presence of ACM. When occupants observe damaged or deteriorated ACM, they should notify the Housing Manager or an appointed Asbestos Program Manager.
4. Maintenance workers need to adhere to appropriate work practices and procedures when performing maintenance activities around ACM. Organize work practices to minimize the extent and impact of any releases which do occur.

Renovation and Demolition

Perform abatement of the remaining ACM during upcoming renovation projects.

During a demolition phase, remove all ACM contained within those units prior to any demolition activities.

National Emission Standards for Hazardous Air Pollutants (NESHAPS [40 CFR 61]) emphasize procedures for minimizing emissions of asbestos fibers into the environment. With respect to demolition and renovation activities, the important NESHAP areas for consideration are applicability, notification requirements, asbestos emission control procedures, and ACM waste disposal practices and records. In some areas the administration of NESHAP has been delegated to the state level, in which case the regulation may be more stringent or the interpretation and enforcement may vary from the federal authorities. In any case, the NESHAP administrator is a federal or state authority with primary responsibility for regulation of asbestos abatement associated with building demolition or renovation.

REFERENCE FORM 15

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *Asbestos Management Plan, Capehart, MCBH Kaneohe, Kaneohe Bay, HI.* Prepared by Navy Public Works Center. April 1997.

Pages Viewed: Entire Document (see attached Document)

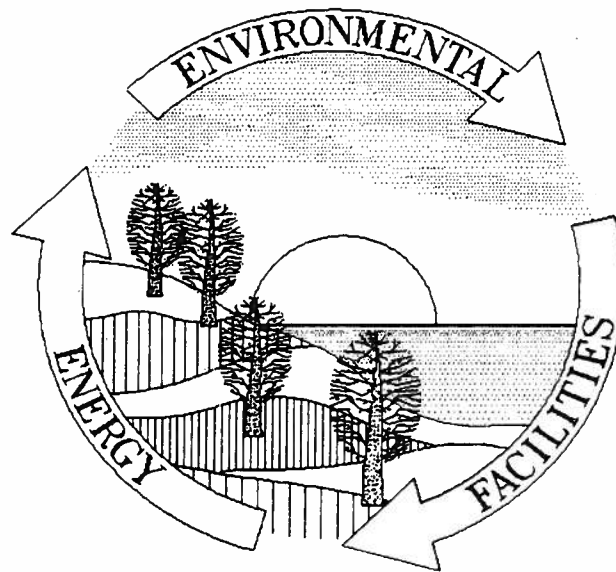
Date Viewed: April 2007

Results: Information reviewed and incorporated in ECP.

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ASBESTOS MANAGEMENT PLAN

**CAPEHART
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APRIL 1997

NOTE: This document is intended to be a working management plan for Capehart housing. Refer to the Asbestos Activity Summary provided for all pertinent program information.

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A special thanks to the housing staff at MCB Kaneohe who assisted PWC - Norfolk, Virginia in completing their project efficiently.

COMMUNITY DESCRIPTION

A summary of the Capehart inspection is in Table 1 below. Provided in Appendix I is a listing of the housing units inspected.

- Community Number: 0404 ¹
- Activity UIC Number: M00318 ¹
- Inspection Dates: August - November 1996

Table 1 - Inspection Parameters

Housing Type	Square Footage	Total # of Units	# of Units Inspected for Asbestos	Floor Plan Type ²	Year(s) of Construction
Duplexes					
2 Bedrooms	1020	645	2	1	1959
2 Bedrooms	1188		3	2	1959
2 Bedrooms	1188		1	3	1959
2 Bedrooms	1188		0	4	1959
2 Bedrooms	1020		2	5	1959
2 Bedrooms	1188		3	6	1959
2 Bedrooms	1188		9	7	1959
2 Bedrooms	1188		2	8	1959
2 Bedrooms	1188		10	9	1959
2 Bedrooms	1188		4	10	1959
2 Bedrooms	1188		4	11	1959
2 Bedrooms	1254		0	12	1959
2 Bedrooms	1374		3	13	1959
2 Bedrooms	1370		4	14	1959
2 Bedrooms	1372		3	15	1959
2 Bedrooms	1278		1	16	1959
2 Bedrooms	1375		5	17	1959
2 Bedrooms	1332		0	18	1959
2 Bedrooms	1509		0	19	1959
Totals	801090	645	56	NA	

¹ See Definitions - Appendix II.

² See Floor Plans - Appendix I.

FINDINGS AND ANALYSIS**CONFIRMED ASBESTOS CONTAINING MATERIAL**

Included in the table below is a summary of the material assessments and the percentage of housing units within the community that contain the material.

SUSPECT ASBESTOS CONTAINING MATERIAL

provided in Table A of Appendix III is a complete listing of all materials surveyed as suspect asbestos containing material.

Table 2 - Confirmed Asbestos Containing Material*(Listed Numerically by Homogeneous Area #)*

Location ¹	HA # ²	Material	% of Units With ACM	Material Condition ³	Friability ⁴	Potential For ⁵			% Damage	Damage Type ⁶
						Air Erosion	Vibration	Contact		
Throughout	2	FLOOR TILE & MASTIC	88	Good	Non	Low	Mod.	High	0	N
Description: 12" x 12"; Beige speckled pattern										
Kitchen	6	SINK UNDERCOATING	96	Good	Non	Low	High	Low	0	N
Description: White & black										
Bathroom 2, Porch	7	FLOOR TILE & MASTIC	30	Good	Non	Low	Low	Low	0	N
Description: 12" x 12"; light beige w/ brown streaks										

Table 2 - Confirmed Asbestos Containing Material

(Listed Numerically by Homogeneous Area #)

Location ¹	HA # ²	Material	% of Units With ACM	Material Condition ³	Friability ⁴	Potential For ⁵			% Damage	Damage Type ⁶
						Air Erosion	Vibration	Contact		
Porch, Bathroom 1-2	8	FLOOR TILE & MASTIC	13	Good	Non	Low	Mod.	High	0	N
Description: 12" x 12"; dark beige										
Throughout	9	FLOOR TILE & MASTIC	39	Good	Non	Low	Mod.	High	0	N
Description: 12" x 12"; tan										
Exterior	10	WINDOW GLAZING	100	Good	Non	Low	Low	Mod.	0	N
Description: White										
Carport	13	ROLLED ROOFING/ROOF TAR	61	Good	Non	Mod.	Low	Low	0	N
Description: Brown & black										
Bathroom 2, Porch	14	FLOOR TILE & MASTIC	13	Good	Non	Low	Mod.	High	0	N
Description: 12" x 12"; beige w/ olive streaks										
Exterior	15	TRANSITE PIPES	63	Good	Non	High	Low	Low	0	N
Description: Assumed Positive										
Bathroom 1	19	FLOOR TILE & MASTIC	13	Good	Non	Low	Mod.	High	0	N
Description: 12" x 12"; gray speckled pattern										

Table 2 - Confirmed Asbestos Containing Material

(Listed Numerically by Homogeneous Area #)

Location ¹	HA # ²	Material	% of Units With ACM	Material Condition ³	Friability ⁴	Potential For ⁵			% Damage	Damage Type ⁶
						Air Erosion	Vibration	Contact		
Bathroom 1	20	LINOLEUM & MASTIC	2	Good	Non	Low	Low	High	0	N

Description: Yellow w/ pebble pattern

¹See Floor Plans - Appendix I for a visual interpretation of material location.², ³, ⁴, ⁵, ⁶See Definitions - Appendix II.

HAZARD POTENTIAL

Eleven of the 20 homogeneous areas (HA) sampled were determined to be asbestos containing materials (ACM). The exterior transite piping (HA#15) was not sampled to preserve the integrity of the component and is assumed to be ACM. Test all assumed positive ACM prior to initiating any repair, renovation, or demolition activities that may disturb them.

All ACM represent a low potential hazard to occupants and workers due to being low/non-friable, in good condition, with little potential for contact/disturbance.

- Floor Tile & Mastic, HA#2 - Throughout
- Sink Undercoating, HA#6 - Kitchen
- Floor Tile & Mastic, HA#7 - Bath 2, Porch
- Floor Tile & Mastic, HA#8 - Porch, Bath 1-2
- Floor Tile & Mastic, HA#9 - Throughout
- Window Glazing, HA#10 - Exterior
- Rolled Roofing/Roof Tar, HA#13 - Carport
- Floor Tile & Mastic, HA#14 - Bath 2, Porch
- Transite Pipes, HA#15 (ASSUMED POSITIVE) - Exterior
- Floor Tile & Mastic, HA#19 - Bath 1
- Linoleum & Mastic, HA#20 - Bath 1

RECOMMENDATIONS

A summary of the analysis for asbestos containing material is in Table 3. Prioritization of all ACM is from the highest hazard rating first, descending to the least hazardous. Included are recommendations for responding to each material along with any needed clarifying comments. Within Table 3, response actions are sorted by four time frames: short-term, interim control, renovation, and demolition. See Appendix II, definitions, for further clarification of these time frames.

Any action response to manage, control or reduce the potential hazards due to the presence of ACM must be implemented by properly trained and qualified personnel. Additionally, all maintenance activities that relate to ACM must adhere to appropriate work practices and procedures. The United States Environmental Protection Agency Publication 20T-2003, Managing Asbestos in Place (Green Book), 1990 and The National Institute for Building Science publication, Asbestos Operations and Maintenance Work Practices, provide full details for the development and implementation of an O&M program. The Document Package and the Asbestos Activity Summary that accompany this Asbestos Management Plan contain additional references. Included in the Document Package is a generic O&M Plan to assist in the development of the O&M program for MCB Kaneohe.

HAZARD MINIMIZATION

Short-term

Implement an Operations and Maintenance (O&M) Program to manage and control all ACM until abated. Include an appropriate resident notification and education package.

Interim Control

Below is a summary of elements to consider for development of an O&M Program as recommended by the National Institute of Building Sciences (NIBS) publication, Asbestos Operations and Maintenance Work Practices. This information is provided for those lacking a proficient background in managing asbestos or an understanding of what is involved with the design and execution of an effective asbestos O&M Program.

- Asbestos Program Manager appointment and training
- Copies of applicable regulations and guidance documents

- Occupant notification/communication program
- O&M worker, supervisor, and competent person assignments and training program
- Work control/inspection/permit system
- Periodic surveillance program
- Recordkeeping program
- Hazard communication program
- Worker protection program (personal protective equipment)
- Respiratory protection program
- Medical surveillance program
- Asbestos fiber release episode response program
- Air monitoring program
- Waste disposal program
- Confined space program
- Safety program for other hazards

O&M work practices, including removal techniques, vary according to the type of ACM and the conditions of the specific task. The following steps outline general O&M practices to manage ACM in place and reduce potential hazards:

1. Visually inspect confirmed ACM at convenient times such as occupant turn-over for signs of damage or deterioration.
2. Repair/replace damaged or deteriorated ACM, utilizing appropriate O&M work practices and procedures. Reduce or contain materials, dust, or fiber release resulting from work performed on or near ACM.
3. Inform and educate occupants and maintenance workers regarding the presence of ACM. When occupants observe damaged or deteriorated ACM, they should notify the Housing Manager or an appointed Asbestos Program Manager.

4. Maintenance workers need to adhere to appropriate work practices and procedures when performing maintenance activities around ACM. Organize work practices to minimize the extent and impact of any releases which do occur.

Renovation and Demolition

Perform abatement of the remaining ACM during upcoming renovation projects.

During a demolition phase, remove all ACM contained within those units prior to any demolition activities.

National Emission Standards for Hazardous Air Pollutants (NESHAPS [40 CFR 61]) emphasize procedures for minimizing emissions of asbestos fibers into the environment. With respect to demolition and renovation activities, the important NESHAP areas for consideration are applicability, notification requirements, asbestos emission control procedures, and ACM waste disposal practices and records. In some areas the administration of NESHAP has been delegated to the state level, in which case the regulation may be more stringent or the interpretation and enforcement may vary from the federal authorities. In any case, the NESHAP administrator is a federal or state authority with primary responsibility for regulation of asbestos abatement associated with building demolition or renovation.

Table 3 - Prioritization, Action Response, and Time-Frame

Priority ¹	HA # ²	Location ³	Material	Action Response ⁴	Comments
SHORT-TERM					
• Develop and implement an Operations and Maintenance Program for all asbestos containing material.					
INTERIM CONTROL					
• Thoroughly inspect and assess all asbestos containing materials, update records, and perform any required maintenance and repairs annually or sooner, if required, until removal of ACM.					
RENOVATION					
5	2	Throughout	Floor Tile & Mastic	Removal	O&M until abated
Description: 12" x 12"; Beige speckled pattern					
5	6	Kitchen	Sink Undercoating	Removal	O&M until abated
Description: White & black					
5	7	Bathroom 2, Porch	Floor Tile & Mastic	Removal	O&M until abated
Description: 12" x 12"; light beige w/ brown streaks					
5	8	Porch, Bathroom 1-2	Floor Tile & Mastic	Removal	O&M until abated
Description: 12" x 12"; dark beige					
5	9	Throughout	Floor Tile & Mastic	Removal	O&M until abated
Description: 12" x 12"; tan					
5	10	Exterior	Window Glazing	Removal	O&M until abated
Description: White					
5	13	Carport	Rolled Roofing/roof Tar	Removal	O&M until abated
Description: Brown & black					

Table 3 - Prioritization, Action Response, and Time-Frame

Priority ¹	HA # ²	Location ³	Material	Action Response ⁴	Comments
5	14	Bathroom 2, Porch	Floor Tile & Mastic	Removal	O&M until abated
Description: 12" x 12"; beige w/ olive streaks					
5	15	Exterior	Transite Pipes	Removal	O&M until abated
Description: Assumed Positive					
5	19	Bathroom 1	Floor Tile & Mastic	Removal	O&M until abated
Description: 12" x 12"; gray speckled pattern					
5	20	Bathroom 1	Linoleum & Mastic	Removal	O&M until abated
Description: Yellow w/ pebble pattern					
DEMOLITION					
<ul style="list-style-type: none"> Remove all asbestos containing material (friable and/or potential to become friable during demolition) prior to commencing any demolition activities. 					

¹ Prioritization determined by largest hazard rating (highest hazard potential) number first and descending down to lowest hazard rating (lowest hazard potential).

^{2,4} See Definitions - Appendix II.

³ See Floor Plans - Appendix I.

COST ESTIMATES

The estimated short-term and interim control costs are for budget purposes only. The short-term costs in Table 4 include removal, installation, disposal, containment, air monitoring, clean-up, lock-down, final air clearance, and all related supplies needed for each specific job. The interim control costs in Table 5 provide budgeting estimates for training, set-up, and annual monitoring to manage ACM.

SHORT-TERM

The short-term cost is an estimated cost to abate all damaged friable asbestos. PWC Norfolk categorizes these materials as a moderate to high potential hazard, dependent on the extent of damage and friability. These costs represent the "worst case" for abatement of these materials as assessed during this inspection. The estimate accounts for abatement of 100% of the material extrapolated throughout all units in the community. The average quantities per unit are based on a weighted average of all floor plans within the community and the total percentage each floor plan represents within each community. Prior to initiating any abatement action, personnel with proper asbestos training are to reassess the exact extent of damage and friability for all ACM. This task must be done to accomplish an estimate for specific statement of work projects. Standard abatement costs for individual materials are provided in Appendix II - Definitions.

INTERIM CONTROL

The interim control cost estimate is the cost to establish and operate an Operation and Maintenance (O&M) Program for ACM using in-place control measures. The overall interim control cost estimate consists of the One-time Activity Cost and the Annual Community Cost.

One-time Activity Cost

This cost is the estimate for the activity to develop and implement an Asbestos O&M Program. The cost estimate accounts for training of housing and maintenance personnel and notification requirements. The actual cost will be a function of personnel needs/availability, housing staffing structure, and the quantity and characteristics of the housing units at the activity.

Annual Community Cost

This cost is the estimated annual cost to assess, manage, and control the ACM located in a specific housing community. The assessment includes the annual evaluation of each ACM to determine condition, damage type, and friability. Management of ACM includes the time to record the surveillance information for the component into a database, establish a work permit system to determine when work operations or activities may disturb the components creating a fiber release, document changes in condition, repair, or removal of the ACM, and maintain training records. This cost estimate utilizes a cost factor based on the number of ACM per homogeneous community. Capehart housing has 11 ACM. The O&M program requires this monitoring until the potential hazard is no longer present.

Table 4 - Short-term Cost Estimates

Location ¹	Material	HA # ²	Action Response	# of Units	Average Unit Quantity ³	Unit of Measure	Cost Per Unit of Measure	Cost Total
SHORT-TERM								
N/A								

¹See Floor Plans

²See Definitions - Appendix II

Table 5 - Interim Control Cost Estimates

One-time Activity Cost*	
Notification - Each for housing staff, maintenance, and occupants (labor). (4 hrs) (\$50/hr) (3 people)	\$ 600
Controls and Work Practices - Training maintenance personnel (labor and tuition). (8 hrs) (\$50/hr) (4 people) + (4 people) (\$500 tuition)	\$ 3,600
Training - Housing office personnel trained (labor and tuition). (16 hrs) (\$50/hr) (2 people) + (2 people) (\$500 tuition)	\$ 2,600
One-time Activity Cost Subtotal	\$ 6,800
SIOH and Bond - 8% of Subtotal	544
Contingency - 5% of Subtotal	340
One-time Activity Cost Total	\$ 7,684

Annual Community Cost

O&M Surveillance and Record Keeping - Assessment and management of ACM homogeneous areas. The assessment includes the annual evaluation of each ACM to determine condition, damage type, and potential for disturbance. Management of ACM homogeneous areas includes the time to record the surveillance information (by HA) into an asbestos file, establishing a work permit system to determine when operations/activities may disturb ACM, document changes in condition/repairs/removal of ACM, and maintain training records. This cost estimate utilizes a cost factor that is based on the number of ACM homogeneous areas in the community. Capehart has 11 ACM homogeneous areas requiring O&M.¹

ANNUAL COMMUNITY COST = (1.00 ACM cost factor²) (\$50/hr) (645 total units³)

Annual Community Cost Subtotal	\$ 32,250
SIOH and Bond - 8% of Subtotal	\$ 2,580
Contingency - 5% of Subtotal	\$ 1,613
Annual Community Cost Total	\$ 36,443

¹ See Table 2 -- Confirmed Asbestos Containing Materials

² See Appendix 11 - Definitions

³ See Table 1 Inspection Parameters

APPENDIX I

FLOOR PLANS

Inspected Housing Units¹

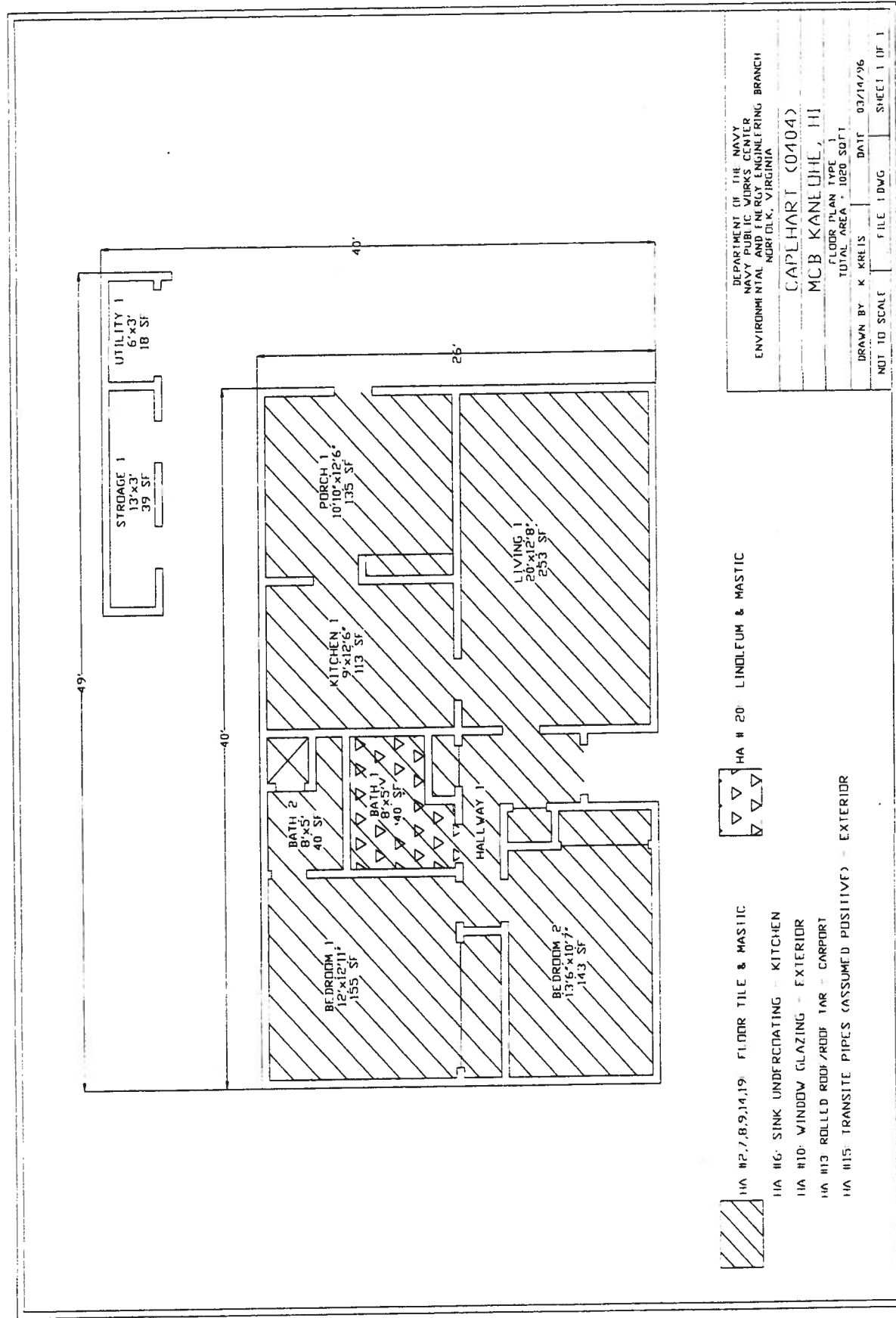
Unit # ²	Address	Floor Plan Type
1	2113 BANCROFT DR	15
2	2117 BANCROFT DR	14
3	2126 BANCROFT DR	17
6	2161 BANCROFT DR	17
7	2167 BANCROFT DR	13
8	2173 BANCROFT DR	14
9	2177 BANCROFT DR	13
10	2214 BAUER DR	14
11	2215 BAUER DR	17
12	2220 BAUER DR	16
13	2225 BAUER DR	14
14	2230 BAUER DR	15
16	2243 BLAIN DR	13
17	2022-B BROWN DR	11
18	2027-A BROWN DR	5
19	2034-A BROWN DR	7
21	2036-A BROWN DR	10
22	2037-B BROWN DR	11
24	2045-B BROWN DR	6
25	2047-A BROWN DR	9
26	2047-B BROWN DR	9
27	2065-B CAMPION DR	11
28	2070-B CAMPION DR	6
29	2072-B CAMPION DR	7
31	2080-A CAMPION DR	7
32	2091-A ELROD DR	9
33	2102-B ELROD DR	7
34	2103-B ELROD DR	9
35	1994-A FLEMING CIR	9
37	2009-B FLEMING CIR	7
38	1953-A HANSON CIR	9
39	1953-B HANSON CIR	9
40	1962-A HANSON CIR	7
42	1972-A HANSON CIR	7
43	1975-A HANSON CIR	8
45	1822-A HARRIS AVE	10
46	1822-B HARRIS AVE	10

Inspected Housing Units¹

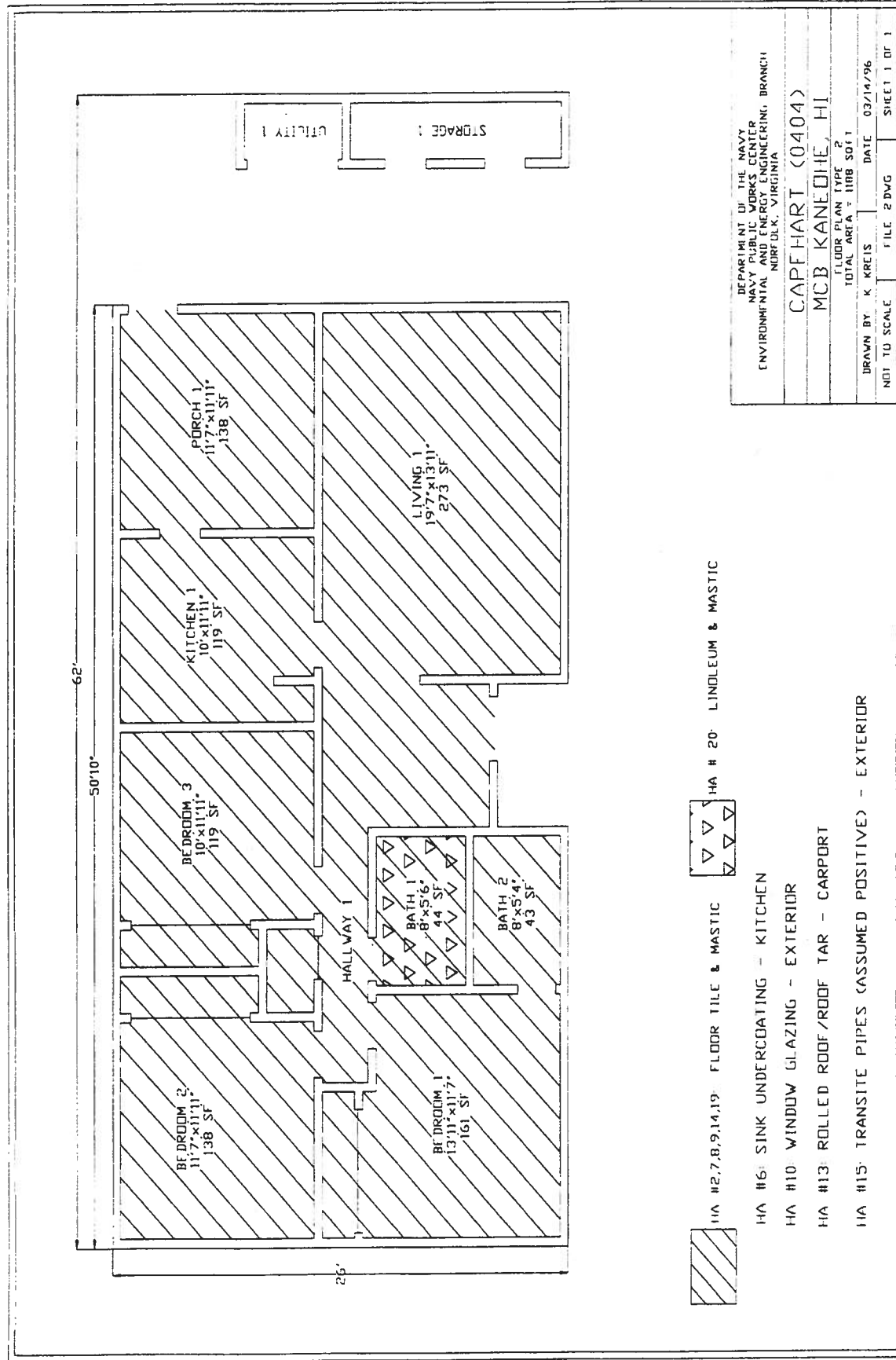
Unit # ²	Address	Floor Plan Type
47	1826-A HARRIS AVE	8
48	1828-B HARRIS AVE	11
49	1842 HARRIS AVE	2
50	1854 HARRIS AVE	2
51	1709 LAWRENCE RD	1
52	1725 LAWRENCE RD	2
53	1729 LAWRENCE RD	3
59	1765-B LAWRENCE RD	5
60	1769-A LAWRENCE RD	9
61	1771-A LAWRENCE RD	6
64	1780-A LAWRENCE RD	9
65	1782-B LAWRENCE RD	7
77	1793-A S LAWRENCE RD	10
85	2136 BANCROFT DR	17
86	2037-A BROWN DR	17
116	not available	15
117	not available	7
118	not available	9
119	not available	1

¹ The same housing units inspected for asbestos and lead-based paint surveys.

² See Definitions - Appendix II.

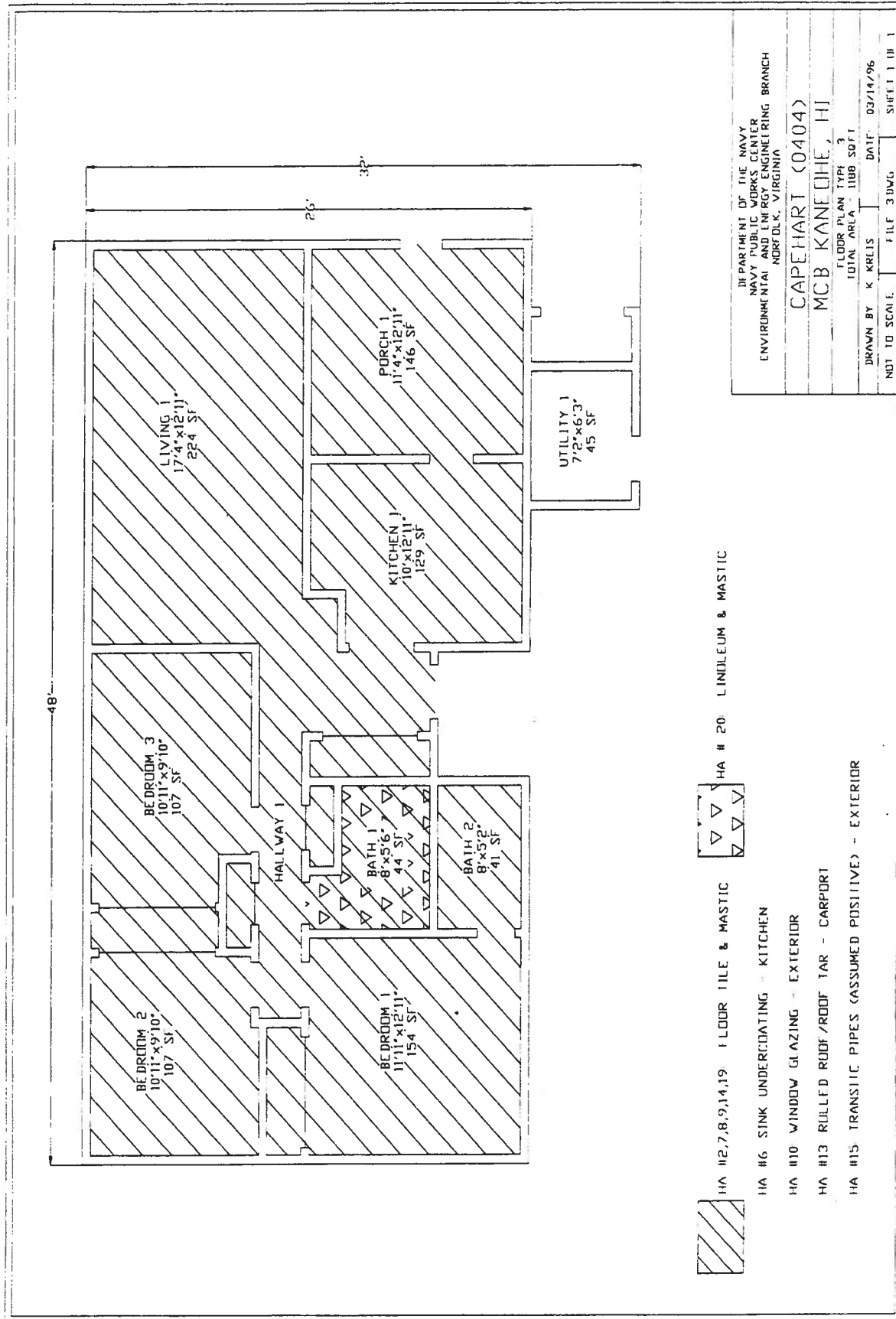


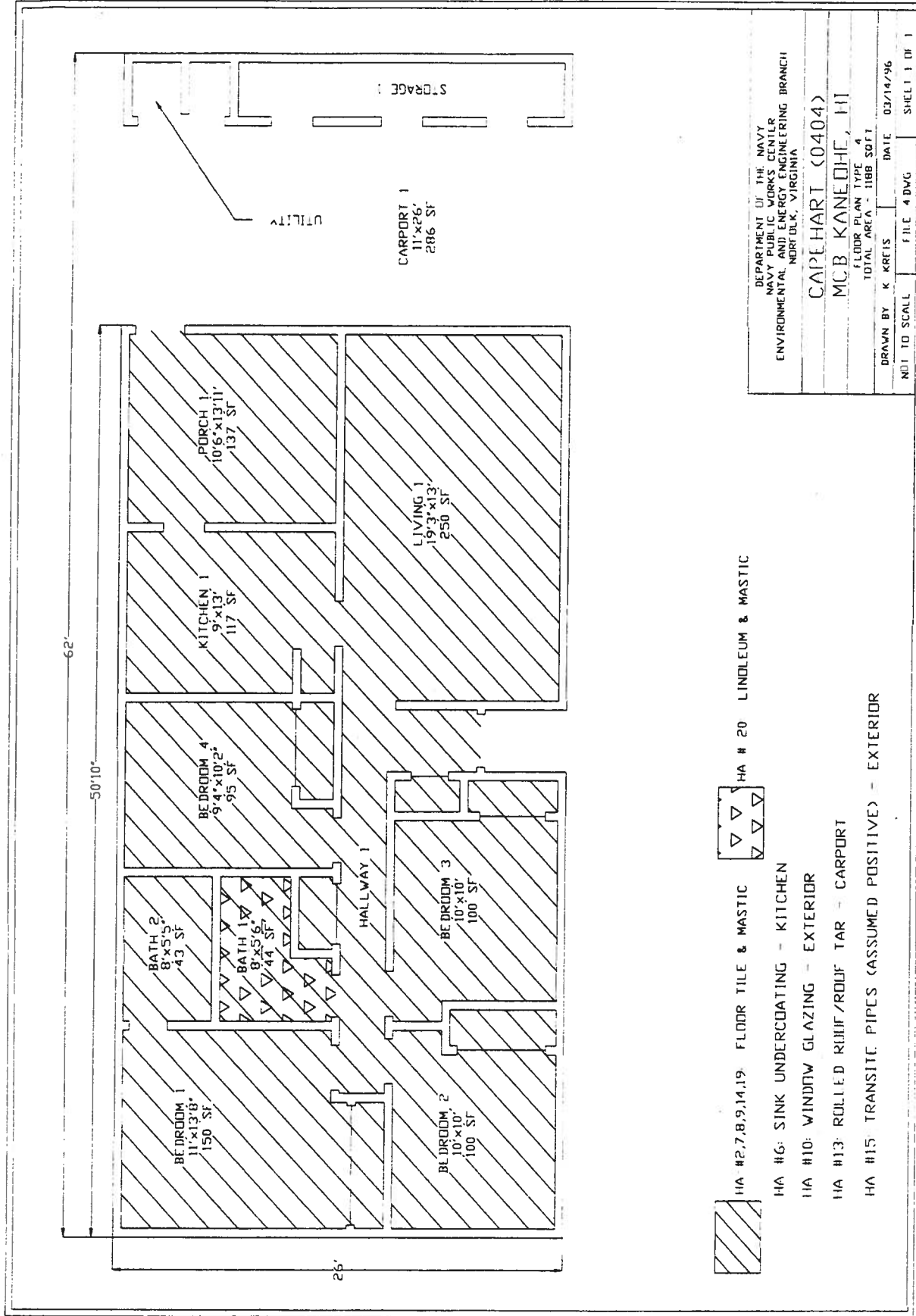
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CAPEHART (0404)			
MCB KANEHLE, HI			
FLOOR PLAN TYPE 1			
TOTAL AREA - 1020 SQ FT			
DRAWN BY K KREIS	FILE 1 DWG	DATE 03/14/96	SHEET 1 OF 1
NOT TO SCALE			

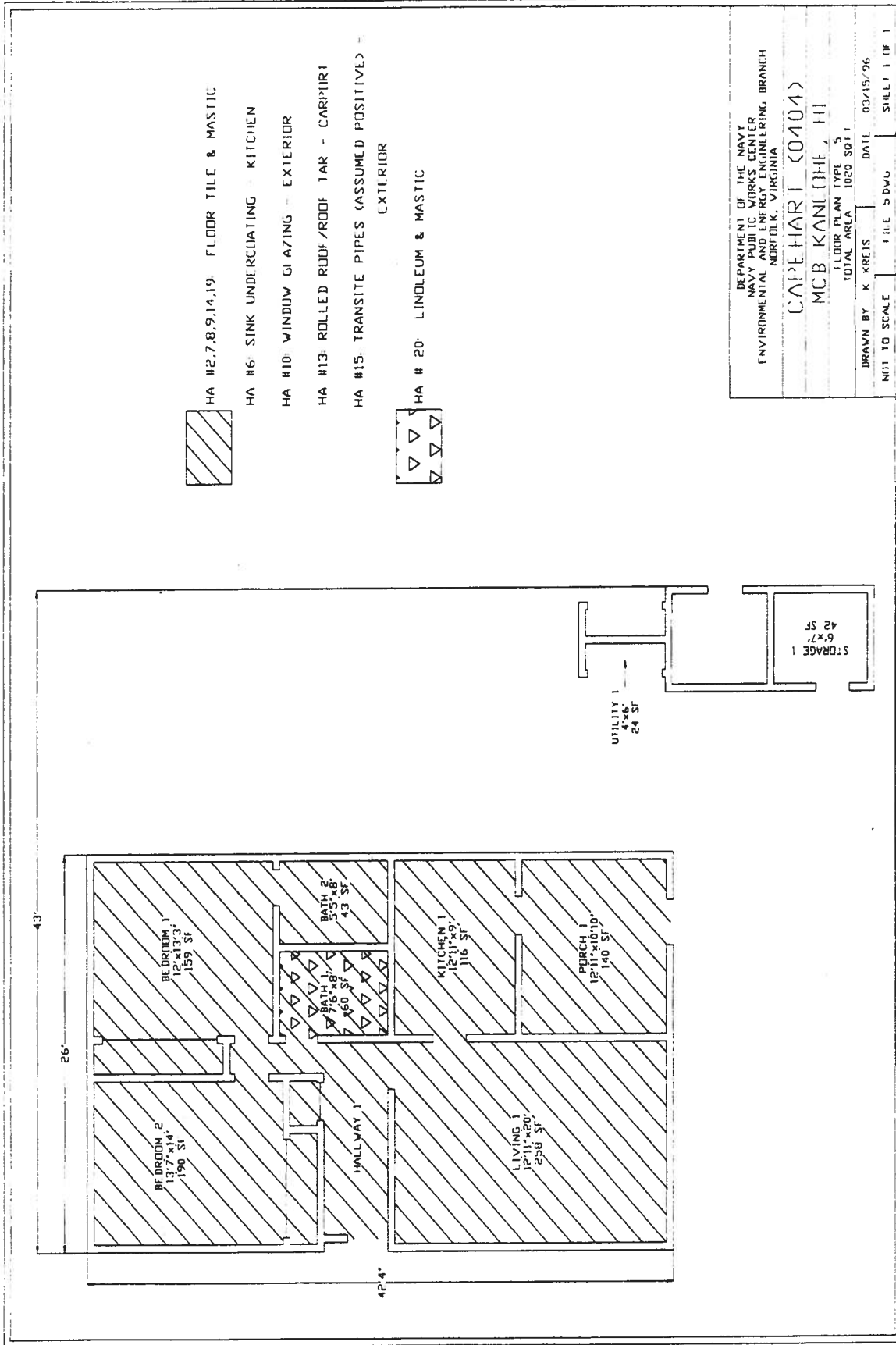


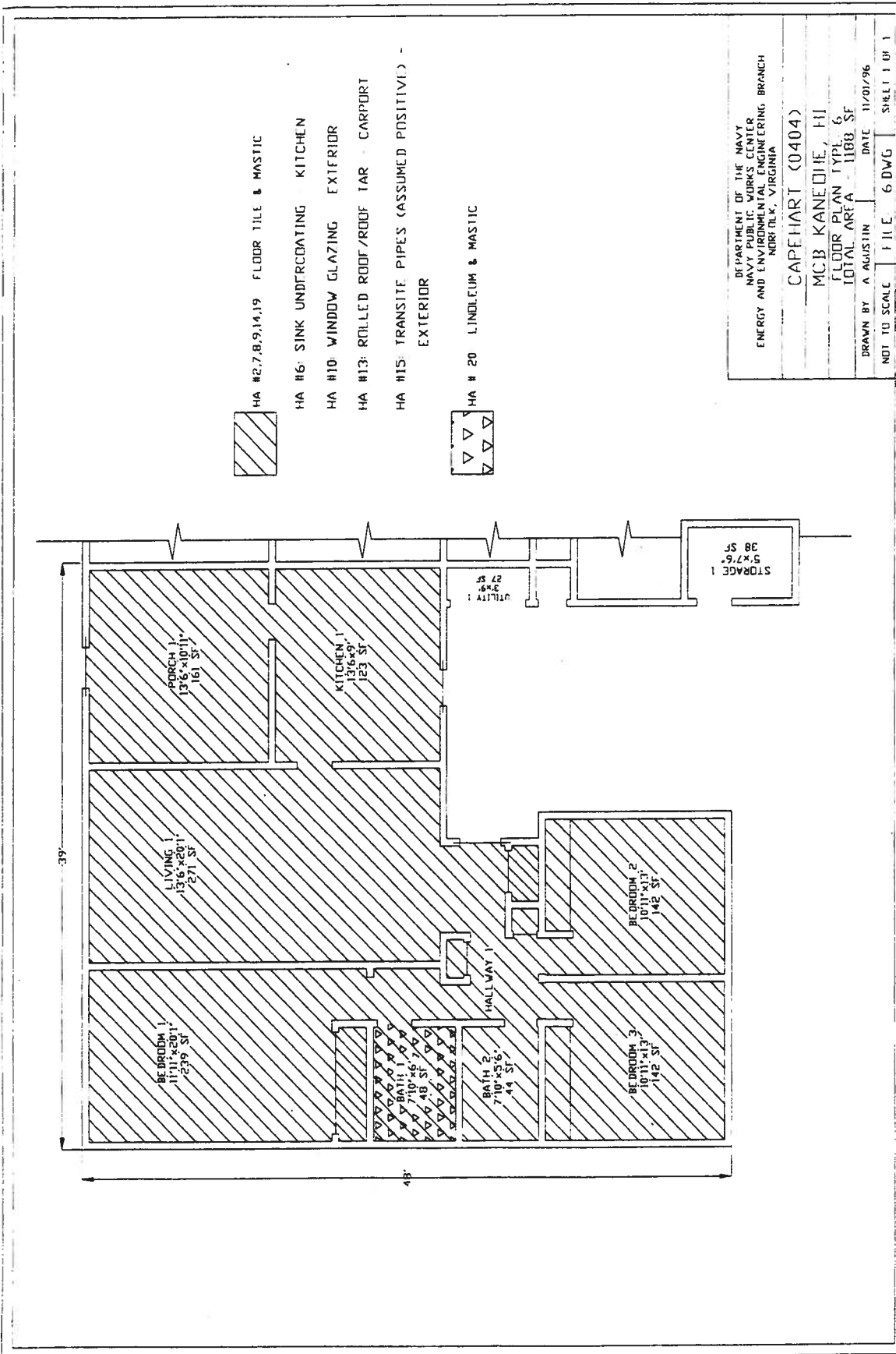
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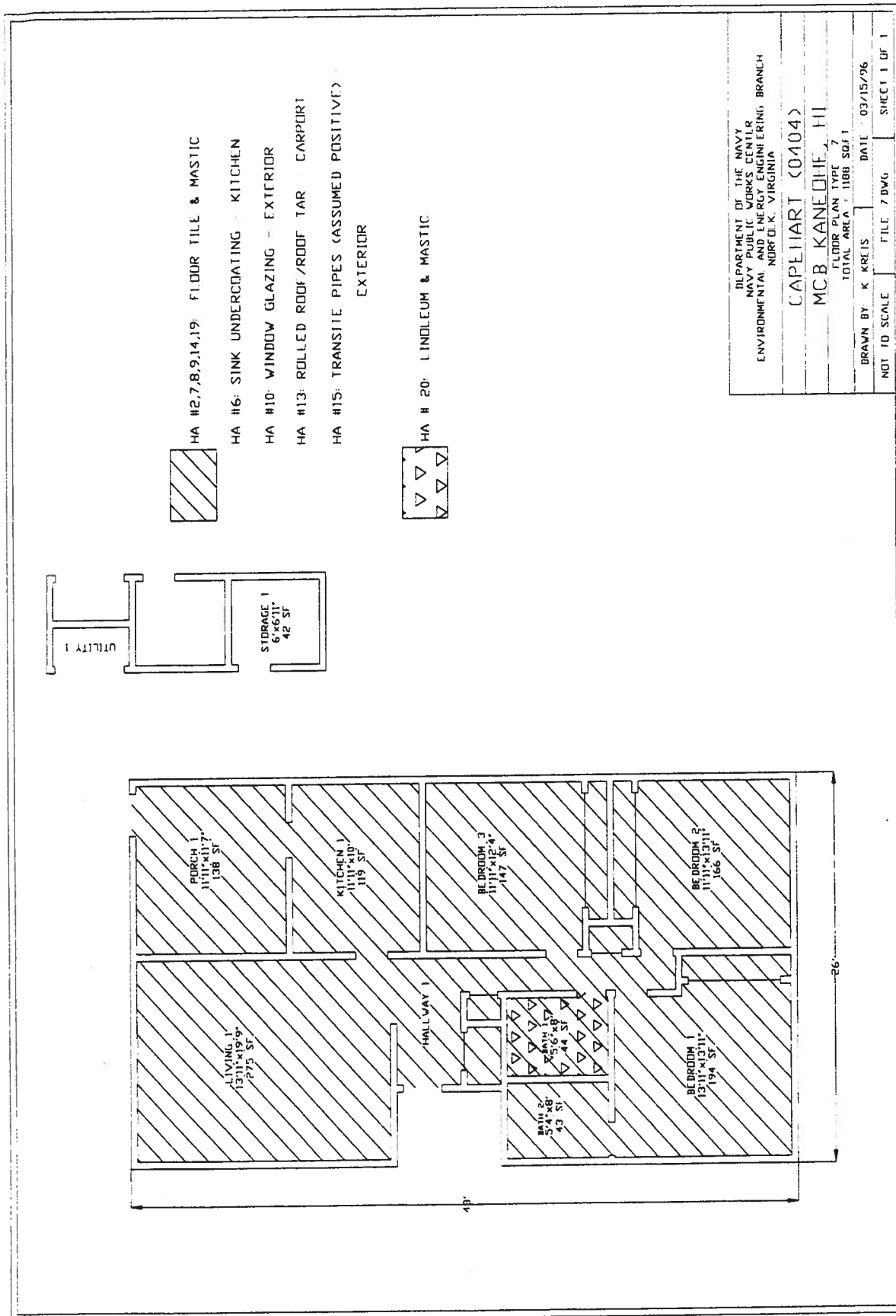
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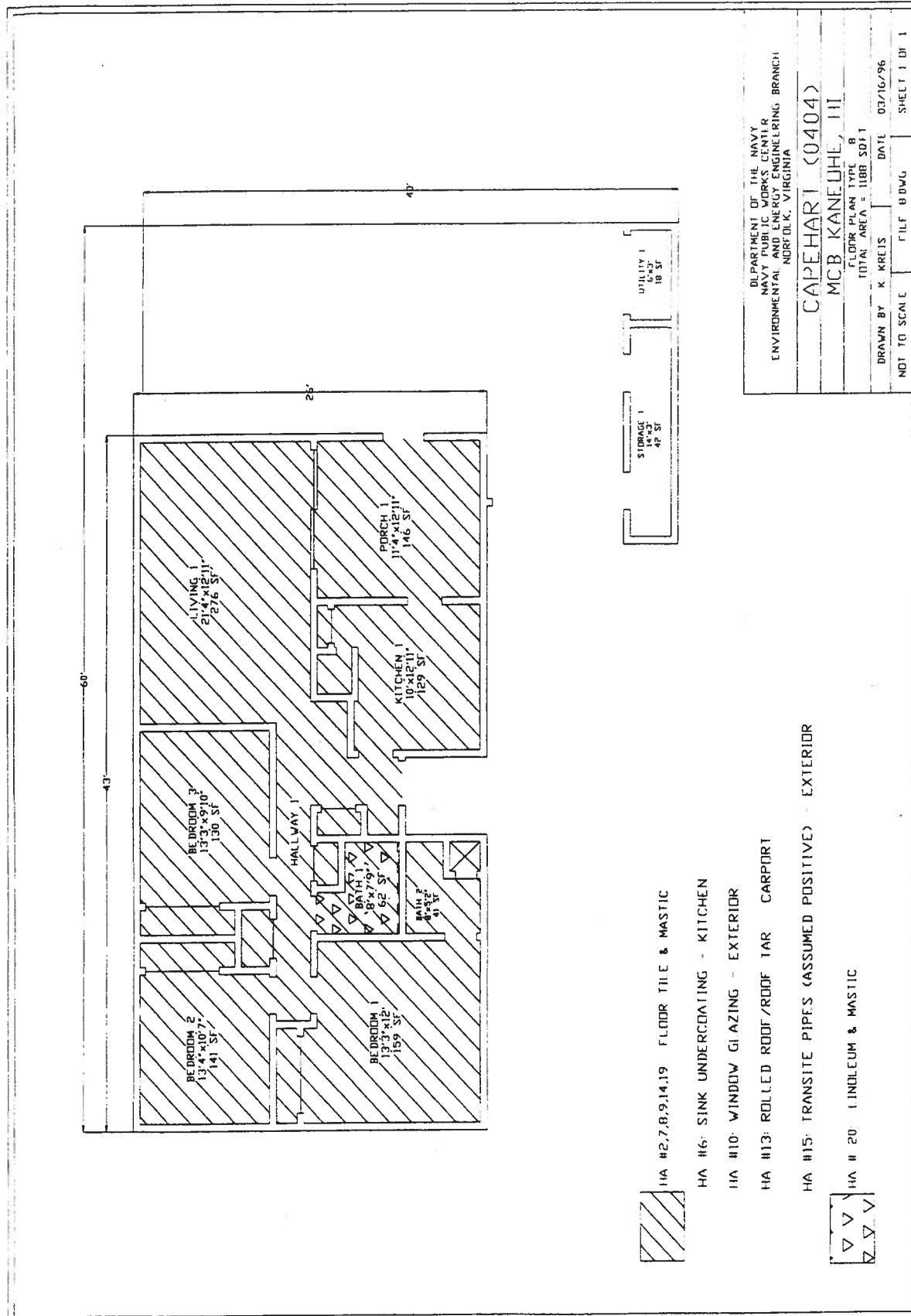


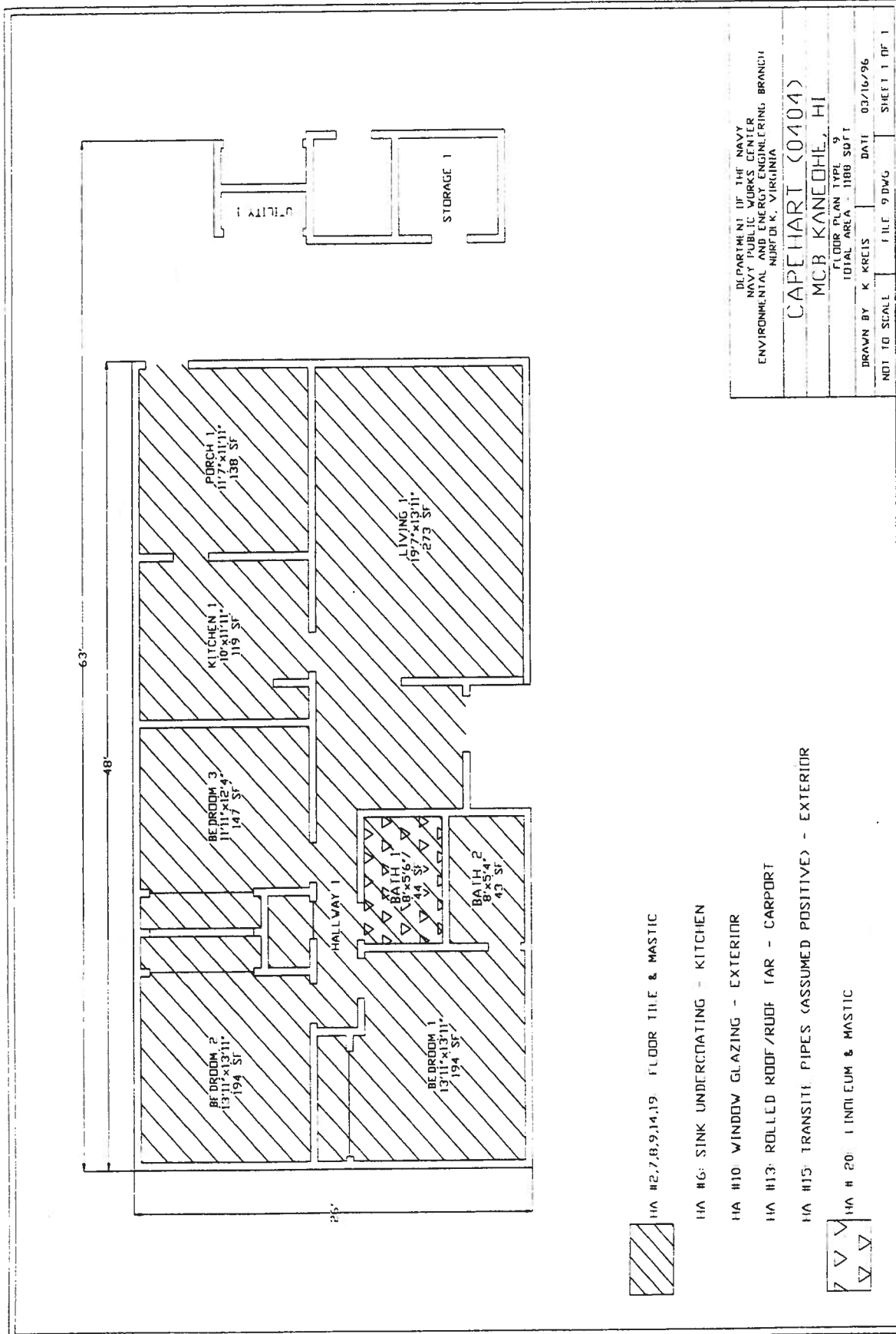


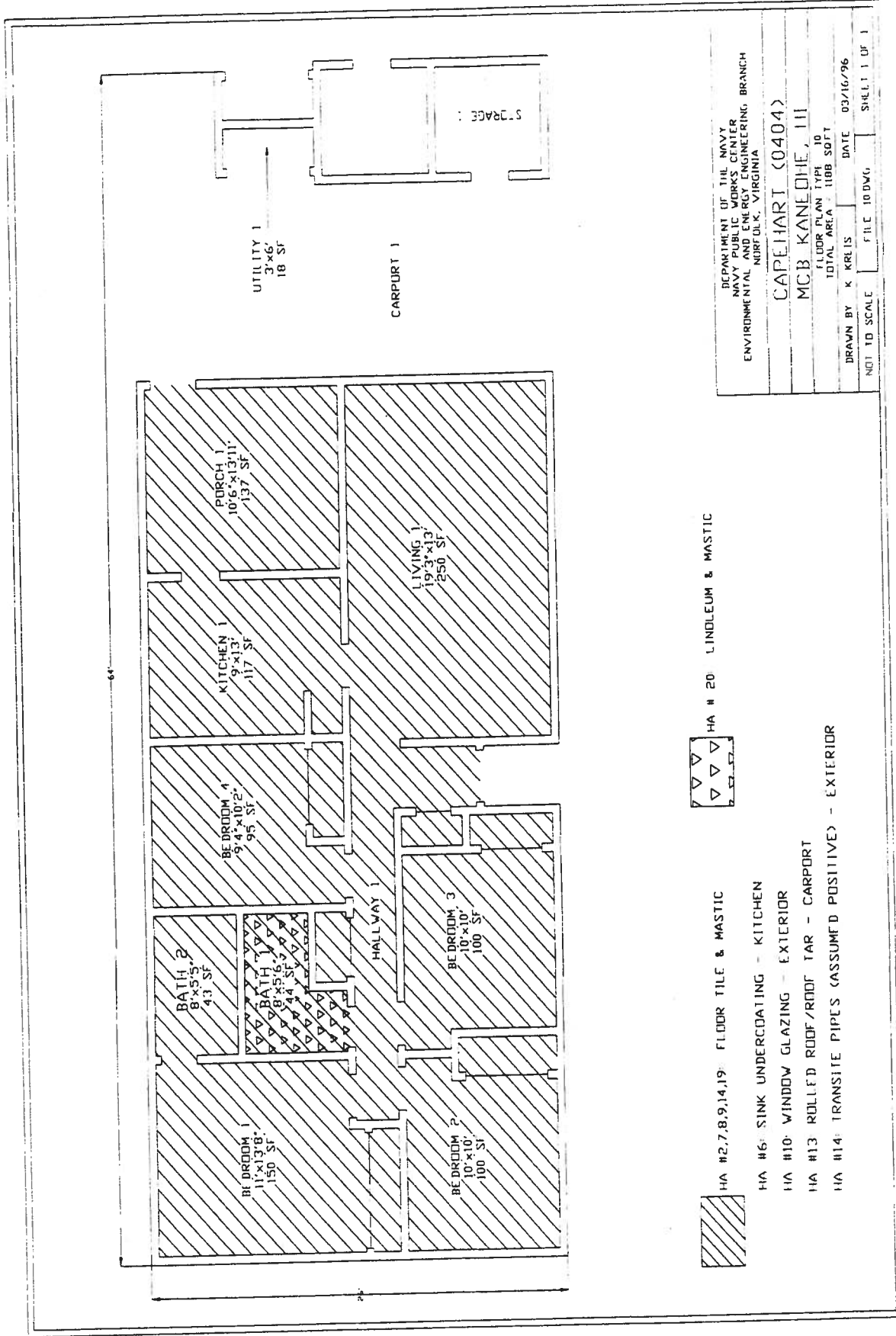


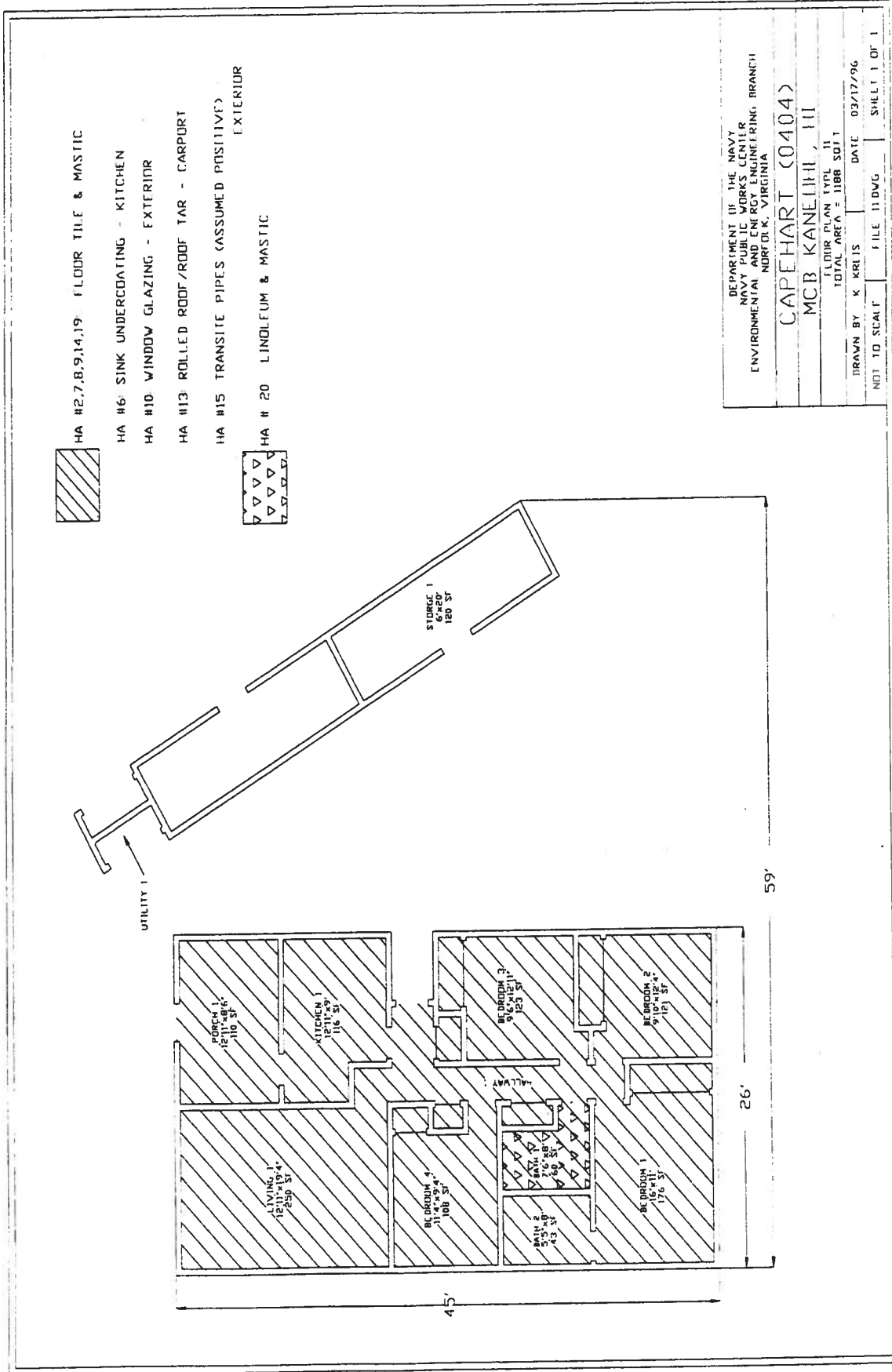






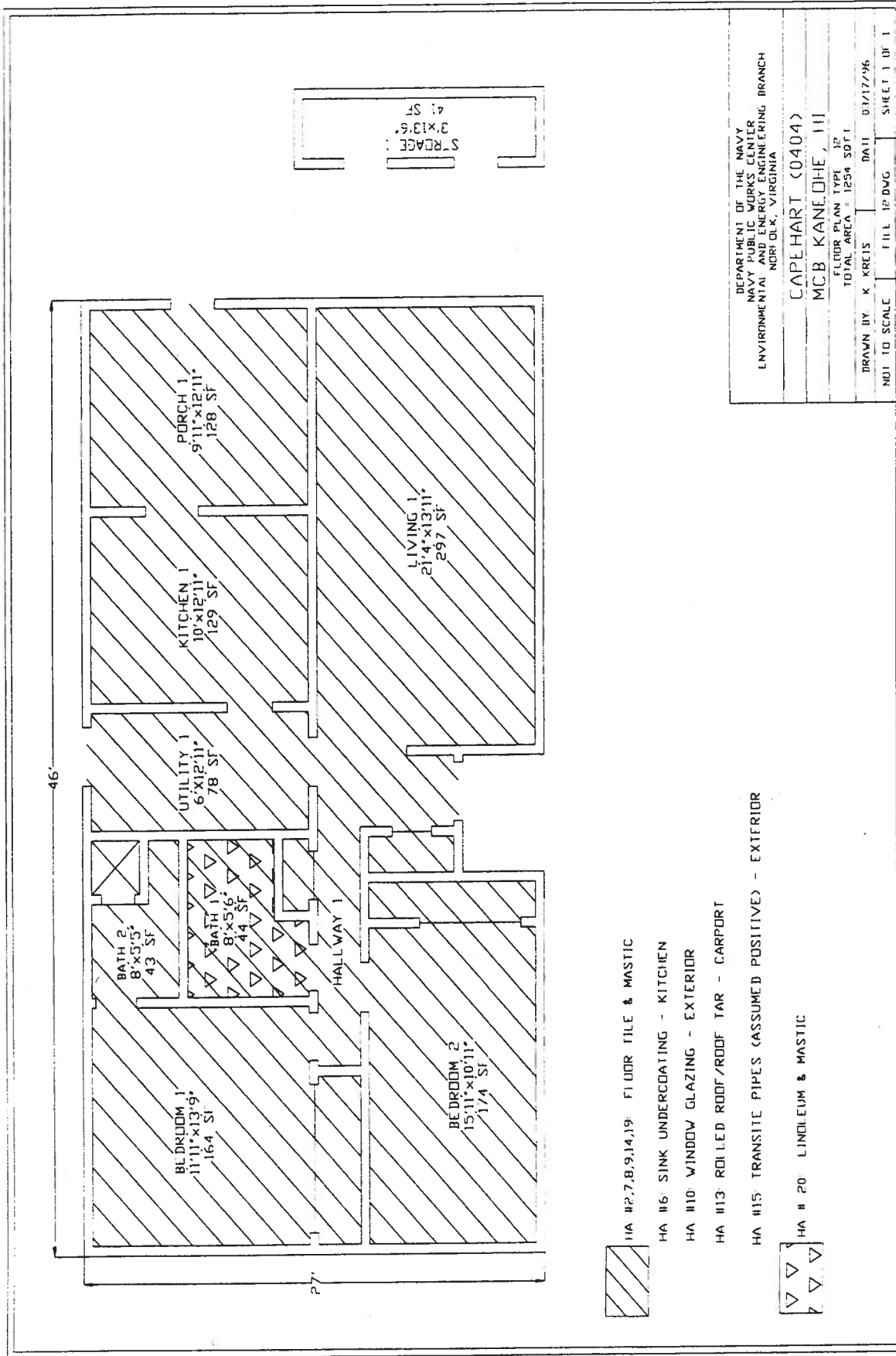






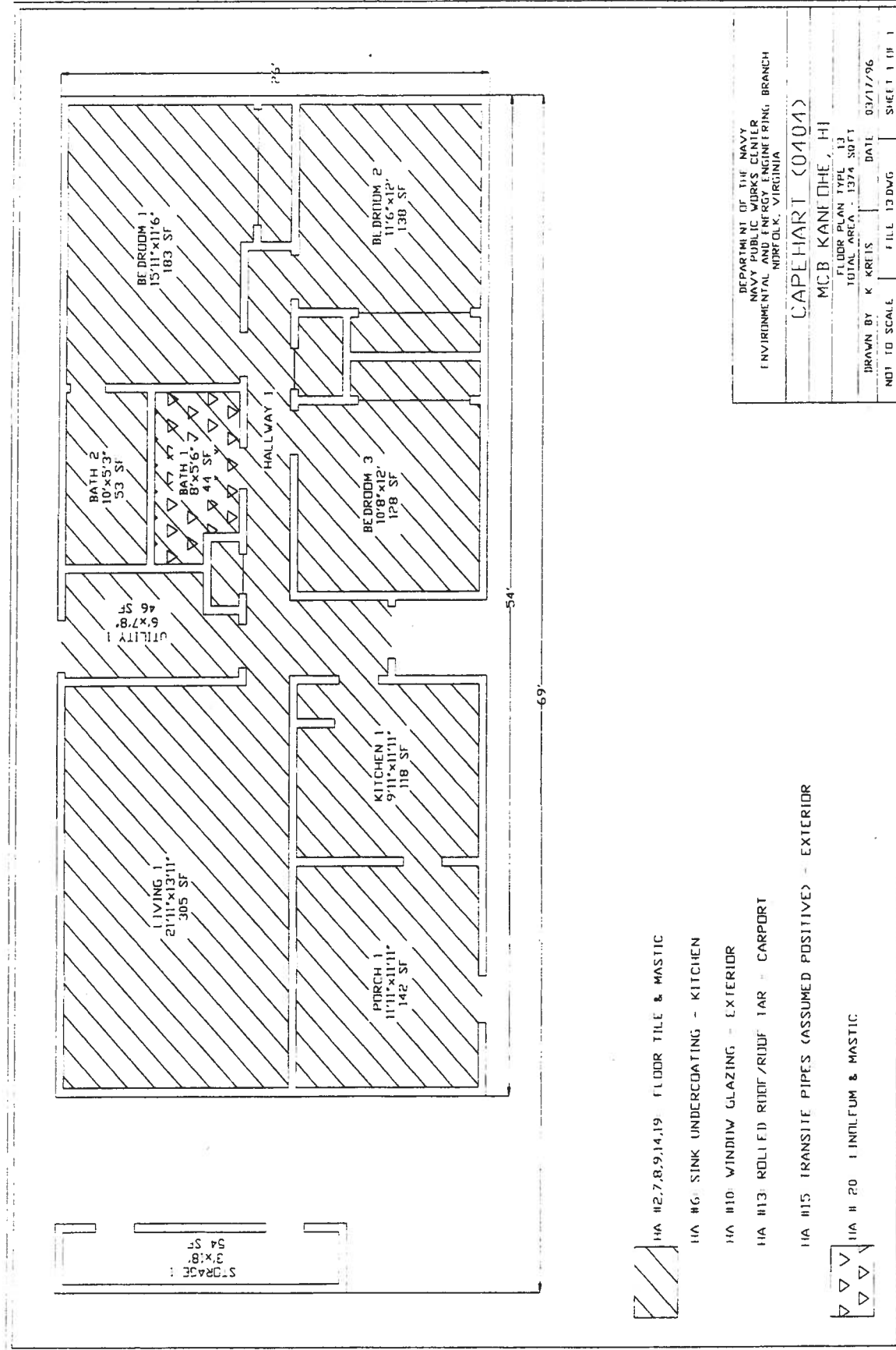
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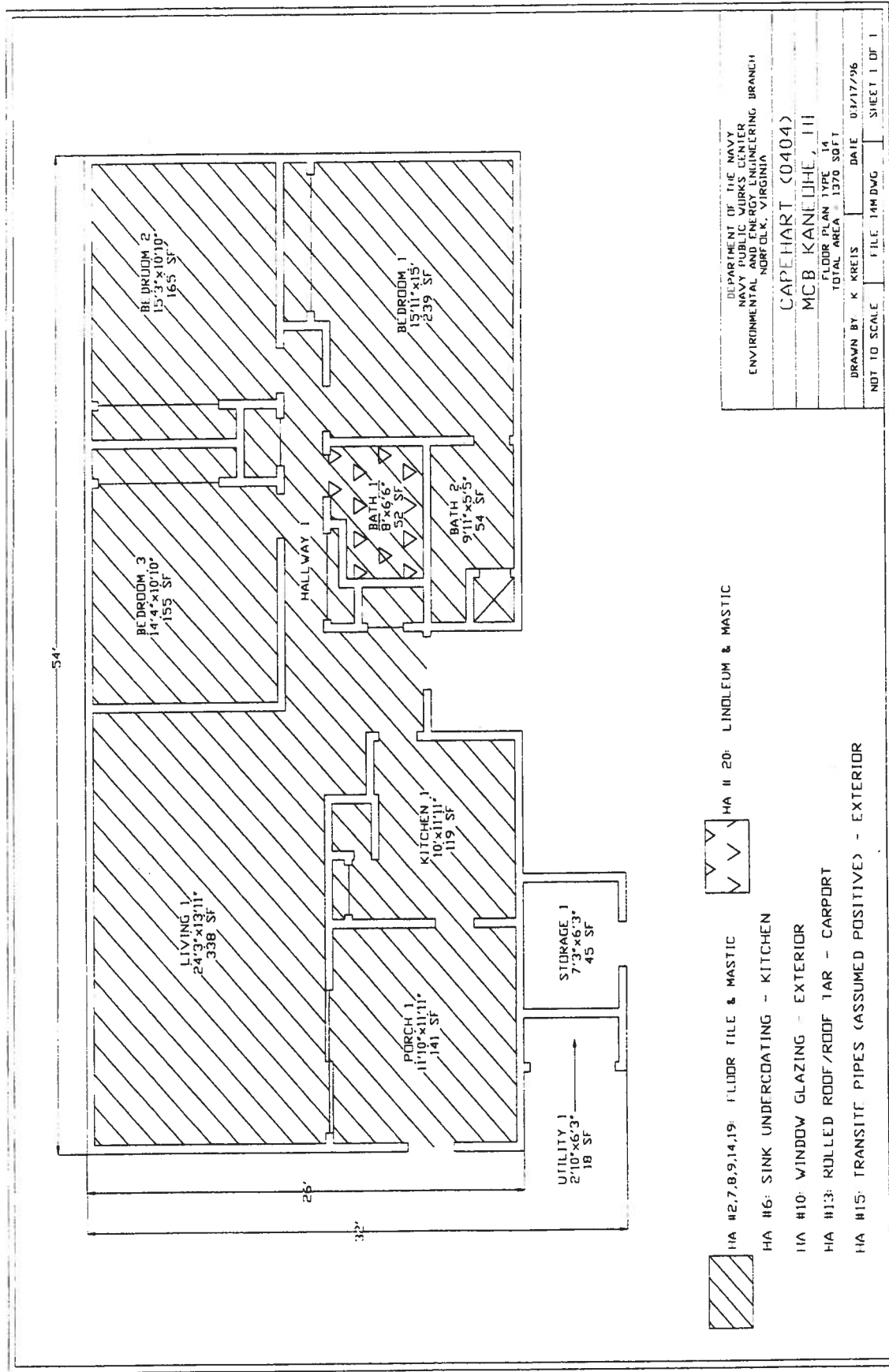
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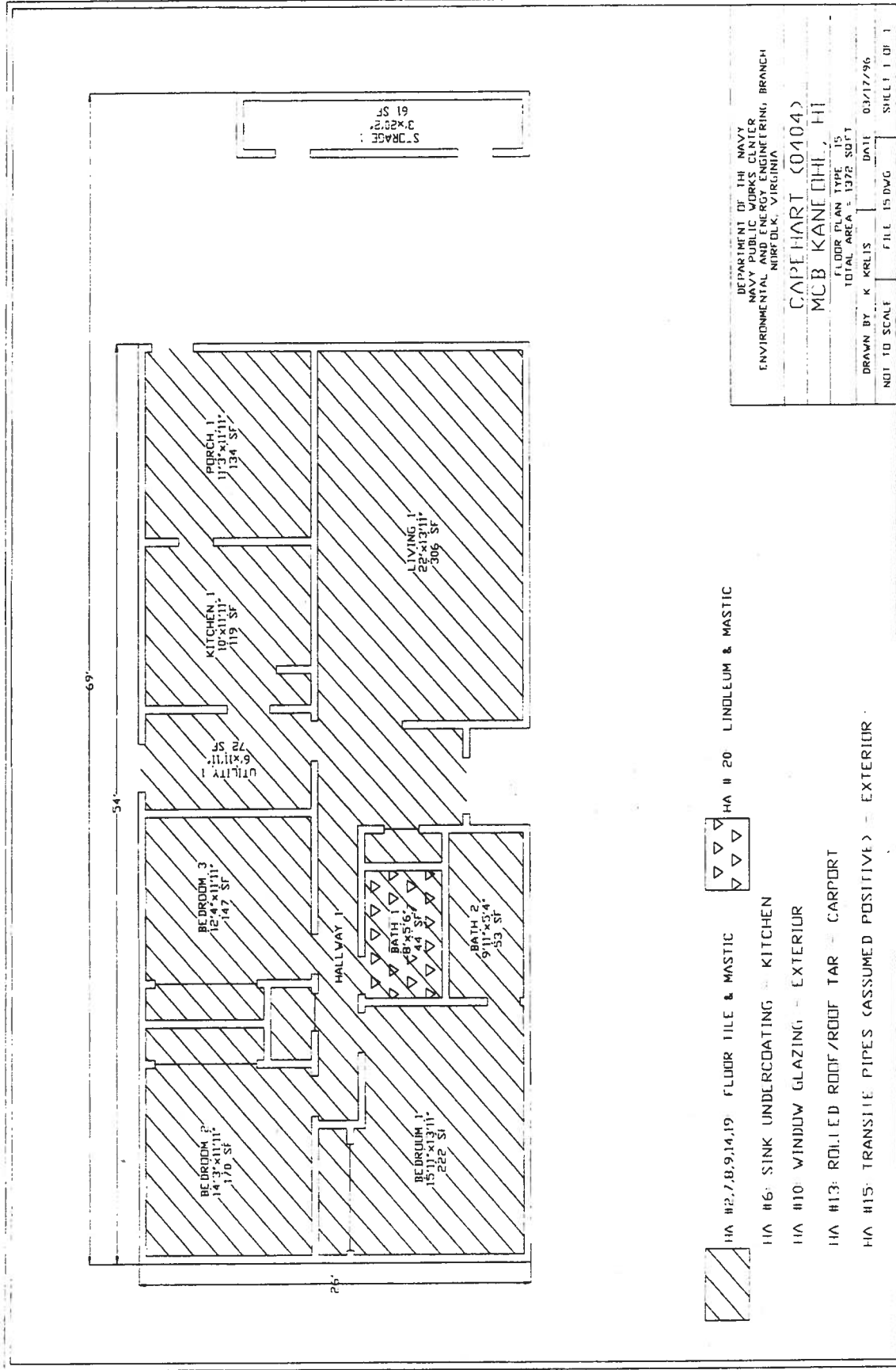


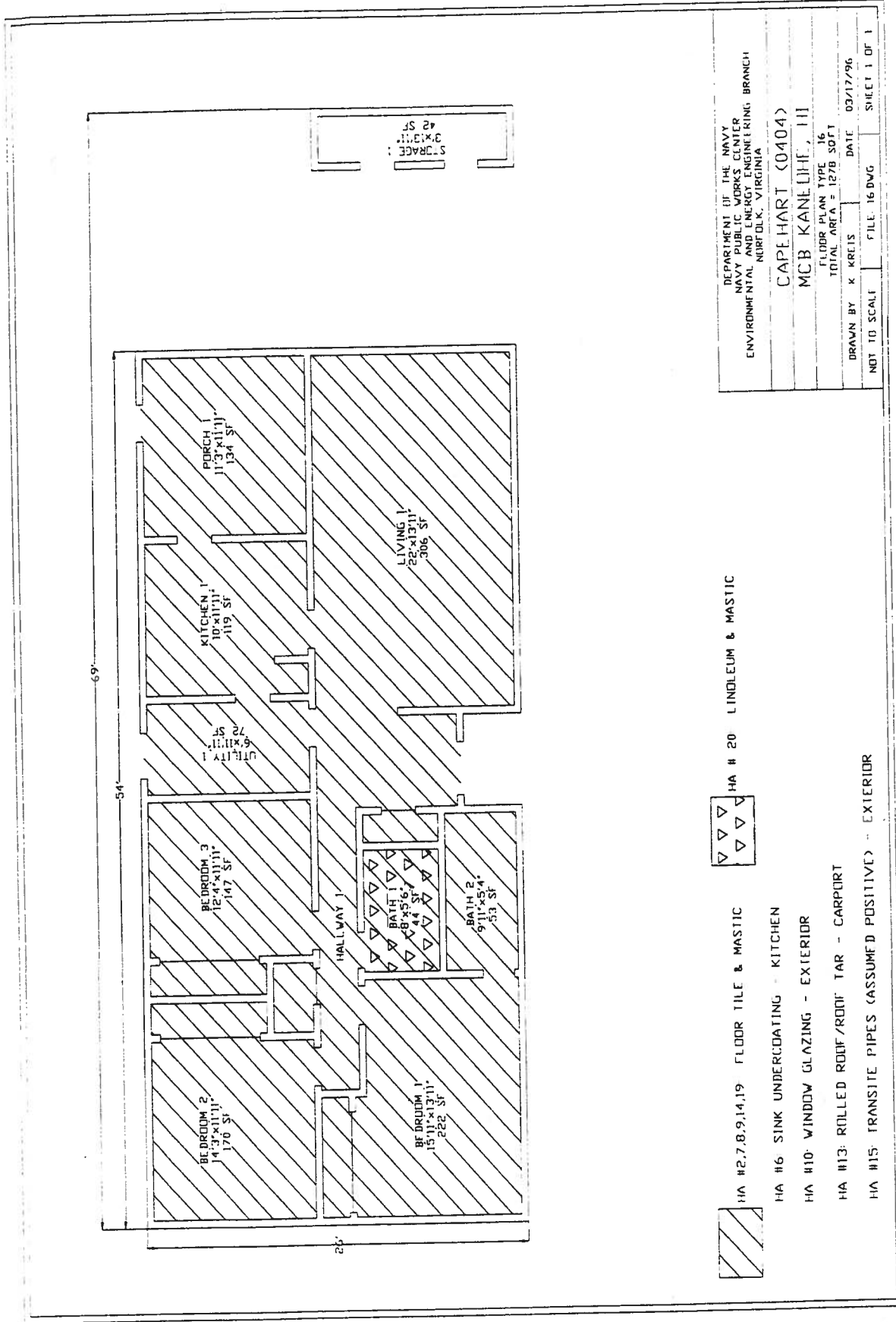
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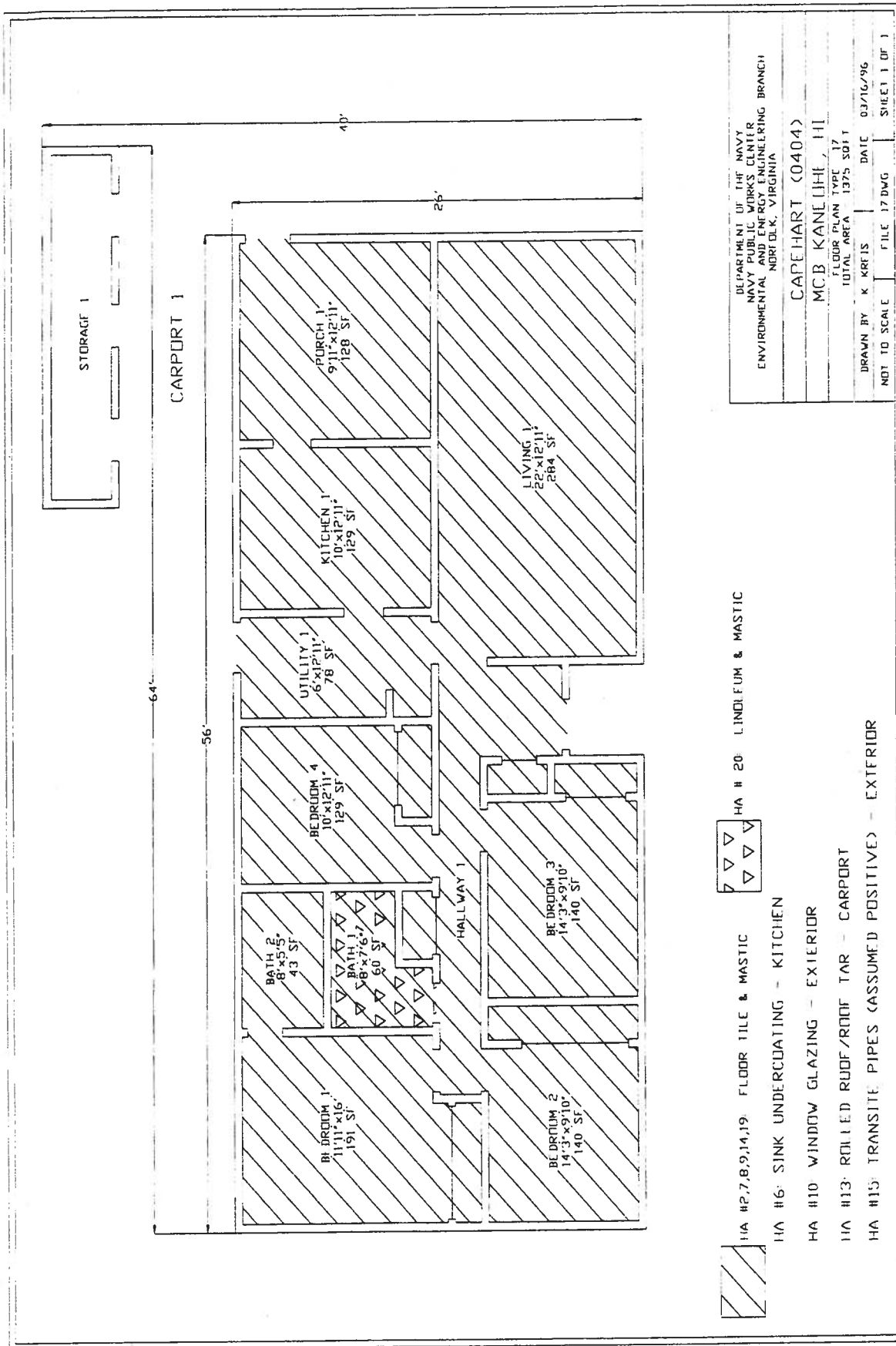
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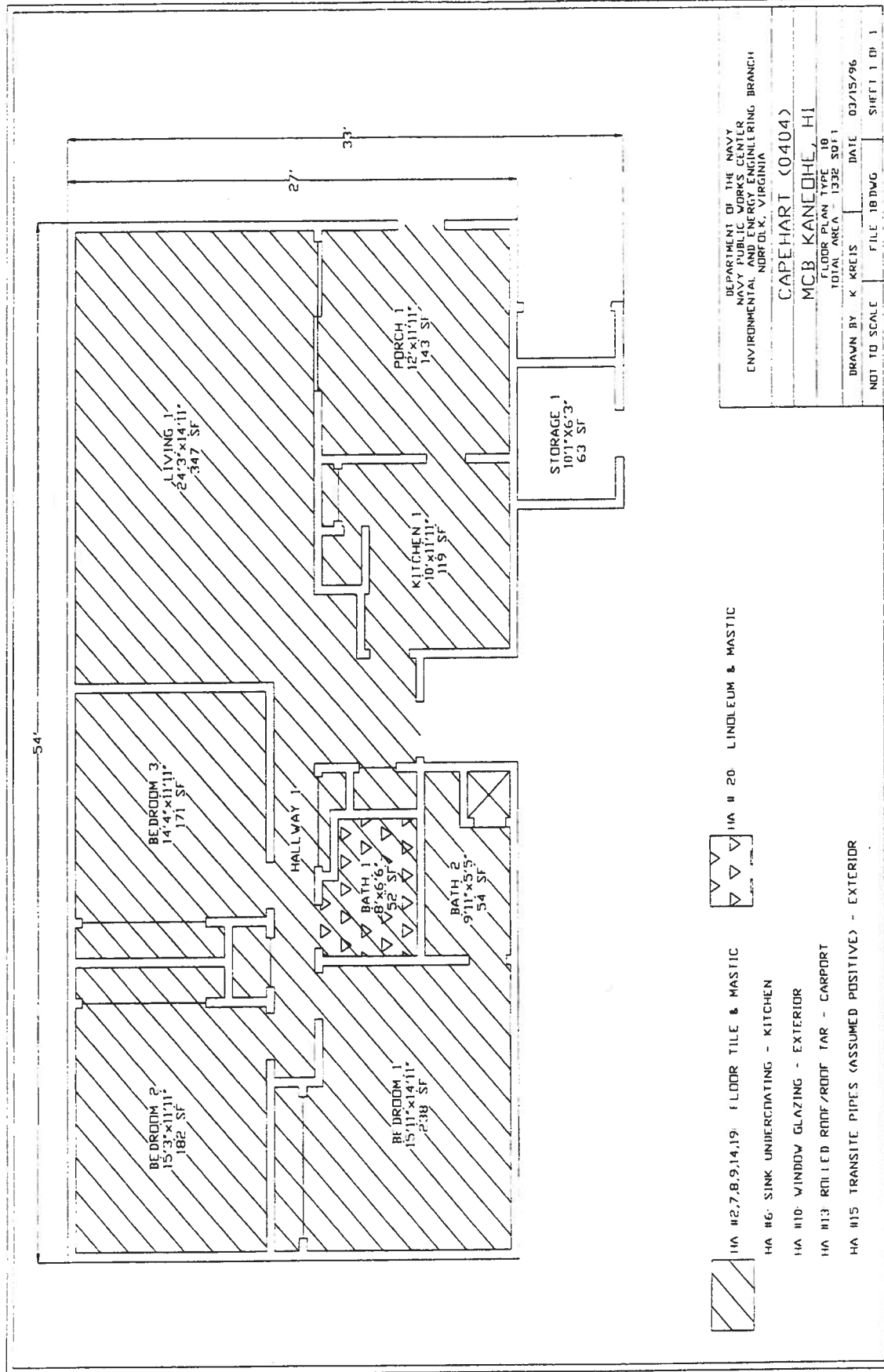


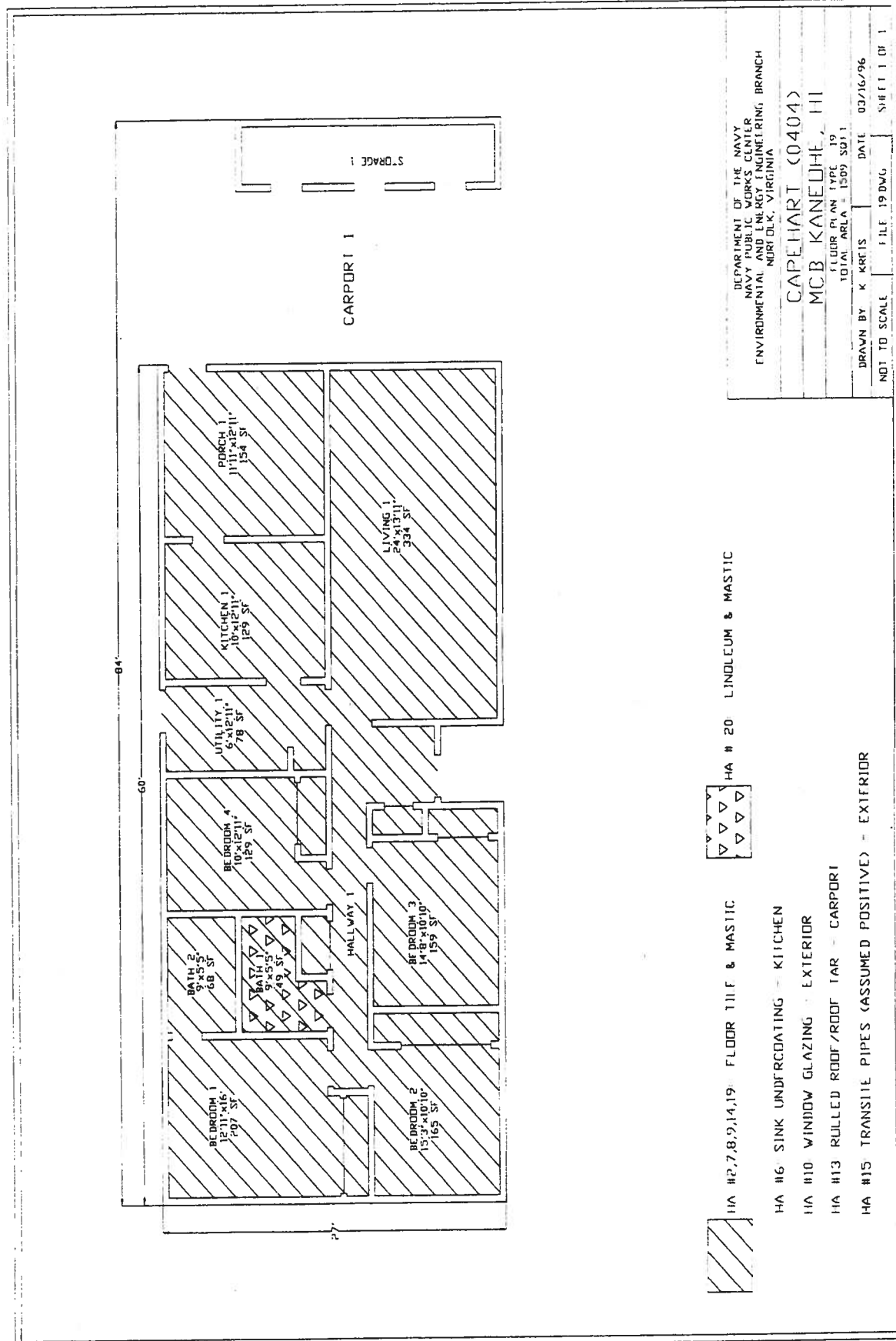






DEPARTMENT OF THE NAVY NAVY PUBLIC WORKS CENTER ENVIRONMENTAL AND ENERGY ENGINEERING BRANCH NORFOLK, VIRGINIA	CAPEHART (0404)	MCB KANAWHA, HI	FLOOR PLAN TYPE TOTAL AREA 1375 SQ FT	DRAWN BY K KREIS	DATE 03/16/96	FILE 17 DWG	SHEET 1 OF 1
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APPENDIX II

DEFINITIONS

Abatement - Procedures to control fiber release from ACM in a building or to remove it entirely. These may involve removal, encapsulation, repair, enclosure, and operations and maintenance programs.

Action Responses:

- **Enclosure** - A resilient structure, built (or sprayed) around ACM designed to prevent disturbance and contain released fibers.
- **Encapsulation** - The use of an agent to seal the surface of ACM by means of bridging or penetrating.
- **Removal** - Physical removal of all present ACM for disposal.
- **Operations and Maintenance (O&M)** - A means of handling asbestos in-place as an interim control until permanently removed.

Action Response Time-frame:

- **Short-term** - Recommend hazard minimization of specified ACM as soon as practicable or at time of occupancy change.
- **Interim Control** - Visually inspect all ACM and assess for condition, hazard potential, and any required repairs or maintenance to be performed. This [O&M] is to occur until elimination (removal) of ACM.
- **Renovation** - Abate specified ACM, as numerically prioritized, during future renovation projects.
- **Demolition** - Remove all ACM prior to commencing any demolition of the structure containing the material. Remove material that is friable or would become friable during demolition. Note that AHERA guidelines classify damaged non-friable material as becoming a friable material, during demolition activities.

Asbestos - A generic name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure, are highly fire resistant, and are separable into various fibers.

Asbestos Categories:

- Assumed - A suspected ACM not sampled to maintain the integrity of the component or for worker protection concerns. Built-up roofing is an example of a material assumed to contain asbestos.
- Miscellaneous - Material other than surfacing or thermal systems insulation such as floor tiles, roofing shingles, and composite boards.
- Surfacing - Material that is sprayed-on, troweled-on, surfaces such as acoustical plaster on ceilings and fireproofing materials on structural members.
- Thermal Systems Insulation (TSI) - Material applied to pipes, fittings, boilers, tanks, and ducts to prevent heat loss/gain or water condensation.

Asbestos-Containing Material (ACM) - Any material that contains 1% or more asbestos. Provided in the table at the end of this Appendix is a listing of possible materials sampled during asbestos field inspections (only visible and accessible materials sampled).

Asbestos Types:

Actinolite
Amosite (Brown)
Anthophyllite
Crocidolite - Riebeckite (Blue)
Chrysotile - Serpentine (White)
Tremolite

Certified Inspector - A person who has completed a training program certified by the appropriate Federal agency and has met any other requirements for certification or licensing established by such agency.

Community Number - A four-digit numerical designation assigned to the project by the inspection team for record keeping and data management purposes only.

Damage Type:

- D - Deterioration: Damage attributed to degradation mechanisms such as rot, wear, and weathering.
- P - Physical: Damage attributed to impact and abrasive contact.
- W - Water: Damage induced by water or moisture intrusion and degradation.
- N - None

Friable - When dry, a material that crumbles, pulverizes, or reduces to a powder by applying hand pressure.

- High - Material crushed/powdered by minimal hand pressure.
- Moderate - Material crushed/powdered by moderate hand pressure.
- Low - Material crushed/powdered by extreme hand pressure.
- Non - Not able to crush/powder material by hand pressure.

Hazard Potential - A hazard rating (evaluation) tool used to evaluate the ACM potential for hazard to the housing and/or building occupants.

- High - ACM that is highly friable and damaged. This hazard potential category presents the greatest health risk.
- Moderate - ACM that has moderate and/or low friability and is damaged. The hazard priority levels for this hazard potential category are determined by the ACM friability potential and the recommended action responses.
- Low - ACM evaluated to be a minor health risk.

Hazard Priority Levels - Prioritization of hazard potential categories with recommended action response for the ACM.

- Level 1 - Highly friable and damaged ACM. Recommended action response is short-term abatement.
- Level 2 - Moderately friable and damaged ACM. Recommended action response is short-term abatement.

- Level 3 - Damaged ACM with low friability. Recommended action response is short-term repair and O&M.
- Level 4 - Highly and/or moderately friable ACM with no damage. Recommended action response is O&M if the potential for air erosion, vibration, and/or contact is low. If the potential for air erosion, vibration, and/or contact is moderate or high, a short-term action response is required to minimize the condition.
- Level 5 - ACM with low friability and no damage and non-friable ACM. Recommended action response is O&M.

Homogeneous Area Number (HA#) - An area that appears similar throughout in terms of color, texture, and date of material application.

Homogeneous Community - A group of housing units built at the same time utilizing similar materials.

Material Condition:

- Significantly Damaged - More than 25% of the material surface area is deteriorating, cut, torn, blistering, water-stained, crumbling, etc.
- Damaged - Between 1% and 25% of material surface area is deteriorated, cut, torn, blistered, water-stained, crumbling, etc.
- Good - No damage (0%).

Non-Homogeneous Community - Housing units built at different times using different materials.

Operations and Maintenance Annual Cost Factor - A multiplier for calculating annual O&M costs derived from the time estimated for ACM surveillance and record keeping.

# ACM HA	Surveillance (time per unit)	Record Keeping (time per unit)	O&M Annual Cost Factor (time per unit)	Estimated O&M Cost (@ 50.00/hr labor)
1 to 5	0.16	0.50	0.66	\$33.00
6 to 10	0.33	0.50	0.83	\$41.50
11 to 15	0.50	0.50	1.00	\$50.00
15 to 20	0.66	0.50	1.16	\$58.00

Polarized Light Microscopy (PLM) - A method of analyzing bulk samples for asbestos using illumination of the sample with polarized light (light that vibrates in only one plane) and viewed under a light microscope. It determines the amount of asbestos that makes-up a subject material that contains greater than or equal to 1% asbestos.

Potential For Air Erosion, Vibration, Contact:

- High - Continual air flow or movements. The material is continually in the way of maintenance workers and housing occupants.
- Moderate - Noticeable air flow or movements. Maintenance workers are in its vicinity each week and it is accessible to housing occupants.
- Low - No noticeable air flow or movements. Maintenance workers are in its vicinity less than once per month and/or not visible to housing occupants.

Suspect Asbestos-Containing Materials - The following list of materials have been identified as likely to contain asbestos. Each homogeneous area located is sampled for laboratory analysis to determine if the material contains asbestos. See Appendix III of each respective Asbestos Management Plan for a summary of all materials sampled.

Suspected Asbestos-Containing Materials	
Blown-in Insulation	
Boiler Block or Wearing Surface	
Breaching Insulation	
Ceiling Tile	
Cement Asbestos Insulating Panels	
Cement Asbestos Siding	
Cement Asbestos Wallboard	
Chalkboards	
Cooling Tower Baffles or Louvers	
Cooling Tower Fill	
Damp-proofing	
Door Insulation	
Drywall	
Duct Insulation	
Ductwork Taping	

Suspected Asbestos-Containing Materials

Electrical Cloth
Electrical Ducts
Electrical Panel Partitions
Elevator Brake Shoes
Elevator Equipment Panels
Elevator Vinyl Asbestos Tile
Fire Curtains
Fire Damper
Flexible Fabric Joints (Vibration Dampening Cloth)
Flooring, Asphalt Tile
Flooring, Backing
Flooring, Vinyl Asbestos
Flooring, Vinyl Sheet
Flue, Seam Taping
HVAC Gaskets
HVAC Piping Insulation
Incandescent Recessed Fixtures
Insulation, Fireproofing
Insulation, Thermal Sprayed-on
Insulation, Wiring
Laboratory Bench Tops
Laboratory Gloves
Laboratory Hoods
Laboratory Oven Gaskets
Packing or Rope (at penetrations through floors or walls)
Paints
Plaster, Acoustical or Decorative
Plumbing, Equipment Insulation
Plumbing, Pipe Gaskets
Plumbing, Piping Insulation
Putty and/or Caulk
Roofing, Asbestos Base Felt
Roofing, Asbestos Finishing Felt
Roofing, Asphalt Saturated Asbestos Felt
Roofing, Flashing (plastic cement for sheet metal work)
Roofing, Flashing (tar and felt)
Roofing, Reinforced Asbestos Flashing Sheet
Roof, Paint
Stage Lighting
Taping Compounds

Suspected Asbestos-Containing Materials
Textured Coatings
Valve Packing
Waterproofing, Asbestos Base and Finishing Felt
Waterproofing, Flashing

UIC Number - An alpha-numeric designation assigned to each activity/command by the Department of Defense for record keeping purposes.

Unit Number - A three-digit numerical designation determined and utilized by the inspection team for project management tracking purposes only.

Removal and installation prices include costs for disposal, containment, air monitoring, clean up, lock down, final air clearance and all related supplies.

Standard Asbestos Abatement Costs

(FY 96)

Categories	Material	Unit of Measure	Cost Per Unit of Measure (\$)			Comments
			Remove	Install	Total	
Surfacing	Flat Surfaces	SF	9.20	3.45	12.65	Add 15% to cost for ceiling tile/grid replacement.
	Structural Steel					Add 20% for gypsum board.
	Beams		13.80	3.45	17.25	Calculate surface square footage of beams and structural members.
	Joists					
Thermal Systems Insulation	Pipe Insulation	2"	11.50	3.45	14.95	
		4"	16.10	4.60	20.70	
		6"	19.55	5.75	25.30	
		8"	23.00	6.90	29.30	
		10"	25.30	9.20	34.50	
	Fittings/Joints	2"	19.55	5.75	25.30	
		4"	35.65	6.90	42.55	
		6"	43.70	8.05	51.75	
		8"	52.90	9.20	62.10	
		10"	58.65	10.35	69.00	
	Duct Insulation		11.50	4.60	16.10	Add 15% for suspended ceilings
	Boiler/Tank Insulation		26.45	13.80	40.25	Add 20% for gypsum ceilings

Standard Asbestos Abatement Costs

(FY 96)

Categories	Material	Unit of Measure	Cost Per Unit of Measure (\$)			Comments
			Remove	Install	Total	
Miscellaneous	Soil (Crawl Space)	Cubic Yard	402.50	149.50	552.00	Add 20% for crawl spaces w/ less than 3' of clearance.
	Cement Asbestos Paneling	SF	9.20	4.60	13.80	Transite
	Roofing	Asphalt Shingle		1.15	9.20	
		Built-up		3.45	11.50	
		Asphalt Roll	8.05	1.15	9.20	
		Rubber Membrane		3.45	11.50	
		Slate		8.05	16.10	
	Floor Tile/Linoleum/Vinyl Baseboard	SF	4.60	2.30	6.90	Add 50% if flooring material is covered w/ carpet.
	Ceiling Tile	SF	6.90	2.30	9.20	Suspended/Glued-on
	Gypsum	SF	4.60	2.30	6.90	
	Window Glazing (based on SF of window)	SF	17.25	46.00	63.25	Price based on replacement of window.
	Garage Doors	SF	4.05	28.75	32.80	

APPENDIX III

SUSPECT ASBESTOS CONTAINING MATERIAL INSPECTION SUMMARY

Table A - Suspect Asbestos Containing Material

(Listed Numerically by Homogeneous Area #)

Location ¹	Material	HA # ²	ACM ³ (Y/N)	% Asbestos	Type of Asbestos ⁴	Comments
Throughout	DRYWALL	1	No	0	N/A	
Description: White						
Throughout	FLOOR TILE & MASTIC	2	Yes	10	Chrysotile	
Description: 12" x 12"; Beige speckled pattern						
Bedroom 1-4, Hallway, Kitchen, Living, Bathroom	VINYL BASEBOARD & MASTIC	3	No	0	N/A	
Description: 4" wide; dark beige						
Hallway, Kitchen, Living, Porch, Bedroom 1-4	VINYL BASEBOARD & MASTIC	4	No	0	N/A	
Description: 2.5" wide; light beige						
Bathroom 1-2	VINYL BASEBOARD & MASTIC	5	No	0	N/A	
Description: 4" wide; light beige						
Kitchen	SINK UNDERCOATING	6	Yes	20	Chrysotile	
Description: White & black						
Bathroom 2, Porch	FLOOR TILE & MASTIC	7	Yes	10	Chrysotile	
Description: 12" x 12"; light beige w/ brown streaks						
Porch, Bathroom 1-2	FLOOR TILE & MASTIC	8	Yes	5	Chrysotile	
Description: 12" x 12"; dark beige						

Table A - Suspect Asbestos Containing Material

(Listed Numerically by Homogeneous Area #)

Location ¹	Material	HA # ²	ACH ³ (Y/N)	% Asbestos	Type of Asbestos ⁴	Comments
Throughout	FLOOR TILE & MASTIC	9	Yes	10	Chrysotile	
Description: 12" x 12"; tan						
Exterior	WINDOW GLAZING	10	Yes	5	Chrysotile	
Description: White						
Exterior	ROOF SHINGLES	11	No	0	N/A	
Description: Black/brown						
Exterior	ROOF FELT	12	No	0	N/A	
Description: Black						
Carpport	ROLLED ROOFING/ROOF TAR	13	Yes	10	Chrysotile	
Description: Brown & black						
Bathroom 2, Porch	FLOOR TILE & MASTIC	14	Yes	5	Chrysotile	
Description: 12" x 12"; beige w/ olive streaks						
Exterior	TRANSITE PIPES	15	Yes	ASSUMED	UNKNOWN	
Description: Assumed Positive						
Bathroom 1-2	VINYL BASEBOARD & MASTIC	17	No	0	N/A	
Description: 4" wide; black						
Bedroom 1-4, Hallway, Living, Bathroom 1-2	ACOUSTICAL CELLING	18	No	0	N/A	
Description:						

Table A - Suspect Asbestos Containing Material

(Listed Numerically by Homogeneous Area #)

Location ¹	Material	HA # ²	ACM ³ (Y/N)	% Asbestos	Type of Asbestos ⁴	Comments
Bathroom 1	FLOOR TILE & MASTIC	19	Yes	5	Chrysotile	
Description: 12" x 12"; gray speckled pattern						
Bathroom 1	LINOLEUM & MASTIC	20	Yes	70	Chrysotile	
Description: Yellow w/ pebble pattern						

¹ See Floor Plans - Appendix I.
^{2, 3, 4} See Definitions - Appendix II.

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REFERENCE FORM 16

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *Asbestos Management Plan, Ulupau Housing, MCB Kaneohe, Kaneohe HI.* Prepared by Navy Public Works Center. April 1997.

Pages Viewed: Entire Document (see attached Document)

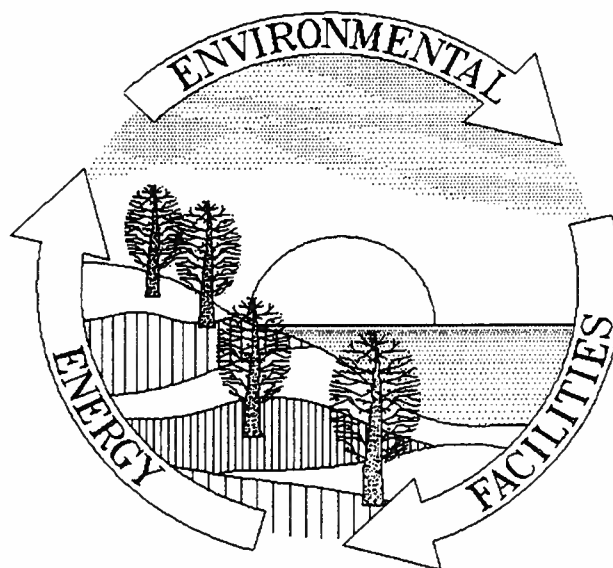
Date Viewed: April 2007

Results: Information reviewed and incorporated in ECP.

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ASBESTOS MANAGEMENT PLAN

**ULUPAU HOUSING
MCB KANEOHE
KANEOHE, HI**



SPONSORED BY:

Department of the Navy
Commandant of the Marine Corps
(LFF-3) Headquarters, US Marine Corps
2 Navy Annex, Washington, D.C. 20380-1775

PREPARED BY:

Department of the Navy
Navy Public Works Center
Energy and Environmental Engineering Branch, Code 333
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

APRIL 1997

NOTE: This document is intended to be a working management plan for Ulupau Housing. Refer to the Asbestos Activity Summary provided for all pertinent program information.

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PARTICIPANTS

ADMINISTRATION

MCB Kaneohe Project Manager.....(b) (6)
Phone: (b) (6)
DSN: [REDACTED]

Supervisory Engineer (PWC Norfolk, VA).....(b) (6), P.E.
Phone: (b) (6)
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Program Manager (PWC Norfolk, VA).....(b) (6) P.E.
Phone: (b) (6)
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LFF-3 Headquarters, USMC Program Sponsor.....(b) (6)
Phone: (b) (6)
DSN: [REDACTED]

Lead and Asbestos Information Hotline.....1-800-645-4761

PRE-INSPECTION COORDINATION

(b) (6)
[REDACTED]

POST-INSPECTION TEAM

(b) (6)
[REDACTED]

INSPECTION TEAM

(b) (6)
[REDACTED]

LABORATORY SERVICES

T.C. Analytics
Norfolk, VA
(757) 627-0400

A special thanks to the housing staff at MCB Kaneohe who assisted PWC - Norfolk, Virginia in completing their project efficiently.

COMMUNITY DESCRIPTION

A summary of the Ulupau Housing inspection is in Table 1 below.
 Provided in Appendix I is a listing of the housing units inspected.

- Community Number: 0409 ¹
- Activity UIC Number: M00318 ¹
- Inspection Dates: October - November 1996

Table 1 - Inspection Parameters

Housing Type	Square Footage	Total # of Units	# of Units Inspected for Asbestos	Floor Plan Type ²	Year(s) of Construction
Apartments					
2 Bedrooms	920	350	20	409A	1976
4 Bedrooms	1250		34	409B	1976
Totals	379750	350	54		

¹ See Definitions - Appendix II.

² See Floor Plans - Appendix I.

FINDINGS AND ANALYSIS**CONFIRMED ASBESTOS CONTAINING MATERIAL**

Included in the table below is a summary of the material assessments and the percentage of housing units within the community that contain the material.

SUSPECT ASBESTOS CONTAINING MATERIAL

Provided in Table A of Appendix III is a complete listing of all materials surveyed as suspect asbestos containing material.

Table 2 - Confirmed Asbestos Containing Material

(Listed Numerically by Homogeneous Area #)

Location ¹	HA # ²	Material	% of Units With ACM	Material Condition ³	Friability ⁴	Potential For ⁵			% Damage	Damage Type ⁶
						Air Erosion	Vibration	Contact		
Throughout	1	FLOOR TILE & MASTIC	13	Good	Non	Low	Low	High	0	N
Description: 12" x 12"; Beige speckled pattern										
Exterior	3	SHINGLES & ROOF FELT	100	Good	Non	High	Low	Low	0	N
Description: Light brown; ASSUMED POSITIVE										
Bedroom 2, Kitchen, Laundry, Bathroom 1	5	FLOOR TILE & MASTIC	9	Good	Non	Low	Low	High	0	N
Description: 12" x 12"; Light blue speckled pattern										

Table 2 - Confirmed Asbestos Containing Material

(Listed Numerically by Homogeneous Areas #)

Location ¹	HA # ²	Material	% of Units With ACM	Material Condition ³	Friability ⁴	Potential For ⁵			% Damage	Damage Type ⁶
						Air Erosion	Vibration	Contact		
Dining, Hallway 1, Living, Bedroom 1	6	FLOOR TILE & MASTIC	2	Good	Non	Low	Low	High	0	N
Description: 12" x 12"; Dark brown speckled pattern										

¹See Floor Plans - Appendix I for a visual interpretation of material location.
^{2, 3, 4, 5, 6}See Definitions - Appendix II.

HAZARD POTENTIAL

Four of the six homogeneous areas (HA) sampled were determined to be asbestos containing materials (ACM). The shingles/roof felt (HA#3) was not sampled to preserve the integrity of the component and is assumed to be ACM.

These ACM represent a low potential hazard to occupants and workers due to being low/non-friable, in good condition, with little potential for contact/disturbance.

- Floor Tile & Mastic, HA#1 - Throughout
- Shingles & Roof Felt, HA#3 - Exterior
- Floor Tile & Mastic, HA#5 - Bedroom 2, Kitchen, Laundry, Bathroom 1
- Floor Tile & Mastic, HA#6 - Dining, Hallway 1, Living, Bedroom 1

RECOMMENDATIONS

A summary of the analysis for asbestos containing material is in Table 3. Prioritization of all ACM is from the highest hazard rating first, descending to the least hazardous. Included are recommendations for responding to each material along with any needed clarifying comments. Within Table 3, response actions are sorted by four time frames: short-term, interim control, renovation, and demolition. See Appendix II, definitions, for further clarification of these time frames.

Any action response to manage, control or reduce the potential hazards due to the presence of ACM must be implemented by properly trained and qualified personnel. Additionally, all maintenance activities that relate to ACM must adhere to appropriate work practices and procedures. The United States Environmental Protection Agency Publication 20T-2003, Managing Asbestos in Place (Green Book), 1990 and The National Institute for Building Science publication, Asbestos Operations and Maintenance Work Practices, provide full details for the development and implementation of an O&M program. The Document Package and the Asbestos Activity Summary that accompany this Asbestos Management Plan contain additional references. Included in the Document Package is a generic O&M Plan to assist in the development of the O&M program for MCB Kaneohe.

HAZARD MINIMIZATION

Short-term

Implement an Operations and Maintenance (O&M) Program to manage and control all ACM until abated. Include an appropriate resident notification and education package.

Interim Control

Below is a summary of elements to consider for development of an O&M Program as recommended by the National Institute of Building Sciences (NIBS) publication, Asbestos Operations and Maintenance Work Practices. This information is provided for those lacking a proficient background in managing asbestos or an understanding of what is involved with the design and execution of an effective asbestos O&M Program.

- *Asbestos Program Manager appointment and training*
- *Copies of applicable regulations and guidance documents*

- Occupant notification/communication program
- O&M worker, supervisor, and competent person assignments and training program
- Work control/inspection/permit system
- Periodic surveillance program
- Recordkeeping program
- Hazard communication program
- Worker protection program (personal protective equipment)
- Respiratory protection program
- Medical surveillance program
- Asbestos fiber release episode response program
- Air monitoring program
- Waste disposal program
- Confined space program
- Safety program for other hazards

O&M work practices, including removal techniques, vary according to the type of ACM and the conditions of the specific task. The following steps outline general O&M practices to manage ACM in place and reduce potential hazards:

1. Visually inspect confirmed ACM at convenient times such as occupant turn-over for signs of damage or deterioration.
2. Repair/replace damaged or deteriorated ACM, utilizing appropriate O&M work practices and procedures. Reduce or contain materials, dust, or fiber release resulting from work performed on or near ACM.
3. Inform and educate occupants and maintenance workers regarding the presence of ACM. When occupants observe damaged or deteriorated ACM, they should notify the Housing Manager or an appointed Asbestos Program Manager.

4. Maintenance workers need to adhere to appropriate work practices and procedures when performing maintenance activities around ACM. Organize work practices to minimize the extent and impact of any releases which do occur.

Renovation and Demolition

Perform abatement of the remaining ACM during upcoming renovation projects.

During a demolition phase, remove all ACM contained within those units prior to any demolition activities.

National Emission Standards for Hazardous Air Pollutants (NESHAPS [40 CFR 61]) emphasize procedures for minimizing emissions of asbestos fibers into the environment. With respect to demolition and renovation activities, the important NESHAP areas for consideration are applicability, notification requirements, asbestos emission control procedures, and ACM waste disposal practices and records. In some areas the administration of NESHAP has been delegated to the state level, in which case the regulation may be more stringent or the interpretation and enforcement may vary from the federal authorities. In any case, the NESHAP administrator is a federal or state authority with primary responsibility for regulation of asbestos abatement associated with building demolition or renovation.

Table 3 - Prioritization, Action Response, and Time-Frame

Priority ¹	HA # ²	Location ³	Material	Action ⁴ Response	Comments
SHORT-TERM					
• Develop and implement an Operations and Maintenance Program for all asbestos containing material.					
INTERIM CONTROL					
• Thoroughly inspect and assess all asbestos containing materials, update records, and perform any required maintenance and repairs annually or sooner, if required, until removal of ACM.					
RENOVATION					
5	1	Throughout	Floor Tile & Mastic	Removal	O&M until abated
Description: 12" x 12"; Beige speckled pattern					
5	3	Exterior	Shingles & Roof Felt	Test, Remove if ACM	O&M until abated
Description: Light brown; ASSUMED POSITIVE					
5	5	Bedroom 2, Kitchen, Laundry, Bathroom 1	Floor Tile & Mastic	Removal	O&M until abated
Description: 12" x 12"; Light blue speckled pattern					
5	6	Dining, Hallway 1, Living, Bedroom 1	Floor Tile & Mastic	Removal	O&M until abated
Description: 12" x 12"; Dark brown speckled pattern					
DEMOLITION					
• Remove all asbestos containing material (friable and/or potential to become friable during demolition) prior to commencing any demolition activities.					

¹ Prioritization determined by largest hazard rating (highest hazard potential) number first and descending down to lowest hazard rating (lowest hazard potential).

^{2,4} See Definitions- Appendix II.

³ See Floor Plans - Appendix I.

COST ESTIMATES

The estimated short-term and interim control costs are for budget purposes only. The short-term costs in Table 4 include removal, installation, disposal, containment, air monitoring, clean-up, lock-down, final air clearance, and all related supplies needed for each specific job. The interim control costs in Table 5 provide budgeting estimates for training, set-up, and annual monitoring to manage ACM.

SHORT-TERM

The short-term cost is an estimated cost to abate all damaged friable asbestos. PWC Norfolk categorizes these materials as a moderate to high potential hazard, dependent on the extent of damage and friability. These costs represent the "worst case" for abatement of these materials as assessed during this inspection. The estimate accounts for abatement of 100% of the material extrapolated throughout all units in the community. The average quantities per unit are based on a weighted average of all floor plans within the community and the total percentage each floor plan represents within each community. Prior to initiating any abatement action, personnel with proper asbestos training are to reassess the exact extent of damage and friability for all ACM. This task must be done to accomplish an estimate for specific statement of work projects. Standard abatement costs for individual materials are provided in Appendix II - Definitions.

INTERIM CONTROL

The interim control cost estimate is the cost to establish and operate an Operation and Maintenance (O&M) Program for ACM using in-place control measures. The overall interim control cost estimate consists of the One-time Activity Cost and the Annual Community Cost.

One-time Activity Cost

This cost is the estimate for the activity to develop and implement an Asbestos O&M Program. The cost estimate accounts for training of housing and maintenance personnel and notification requirements. The actual cost will be a function of personnel needs/availability, housing staffing structure, and the quantity and characteristics of the housing units at the activity.

Annual Community Cost

This cost is the estimated annual cost to assess, manage, and control the ACM located in a specific housing community. The assessment includes the annual evaluation of each ACM to determine condition, damage type, and friability. Management of ACM includes the time to record the surveillance information for the component into a database, establish a work permit system to determine when work operations or activities may disturb the components creating a fiber release, document changes in condition, repair, or removal of the ACM, and maintain training records. This cost estimate utilizes a cost factor based on the number of ACM per homogeneous community. Ulupau Housing has 4 ACM. The O&M program requires this monitoring until the potential hazard is no longer present.

Table 4 - Short-term Cost Estimates

Location ¹	Material	HA # ²	Action Response	# of Units	Average Unit Quantity ³	Unit of Measure	Cost Per Unit of Measure	Cost Total
SHORT-TERM								
N/A								

¹See Floor Plans

²See Definitions - Appendix II

Table 5 - Interim Control Cost Estimates

	One-time Activity Cost*	
Notification - Each for housing staff, maintenance, and occupants (labor). (4 hrs) (\$50/hr) (3 people)	\$	600
Controls and Work Practices - Training/maintenance personnel (labor and tuition). (8 hrs) (\$50/hr) (4 people) + (4 people) (\$500 tuition)	\$	3,600
Training - Housing office personnel trained (labor and tuition). (16 hrs) (\$50/hr) (2 people) + (2 people) (\$500 tuition)	\$	2,600
One-time Activity Cost Subtotal	\$	6,800
SIOH and Bond - 8% of Subtotal		544
Contingency - 5% of Subtotal		340
One-time Activity Cost Total	\$	7,684

Annual Community Cost

O&M Surveillance and Record Keeping - Assessment and management of ACM homogeneous areas. The assessment includes the annual evaluation of each ACM to determine condition, damage type, and potential for disturbance. Management of ACM homogeneous areas includes the time to record the surveillance information (by HA) into an asbestos file, establishing a work permit system to determine when operations/activities may disturb ACM, document changes in condition/repairs/removal of ACM, and maintain training records. This cost estimate utilizes a cost factor that is based on the number of ACM homogeneous areas in the community. Ulupau Housing has 4 ACM homogeneous areas requiring O&M.¹

ANNUAL COMMUNITY COST = (0.66 ACM cost factor²) (\$50/hr) (350 total units)³

Annual Community Cost Subtotal	\$	11,550
SIOH and Bond - 8% of Subtotal	\$	924
Contingency - 5% of Subtotal	\$	578
Annual Community Cost Total	\$	13,052

¹ See Table 2 -- Confirmed Asbestos Containing Materials

² See Appendix II - Definitions

³ See Table 1 Inspection Parameters

APPENDIX I

FLOOR PLANS

Inspected Housing Units¹

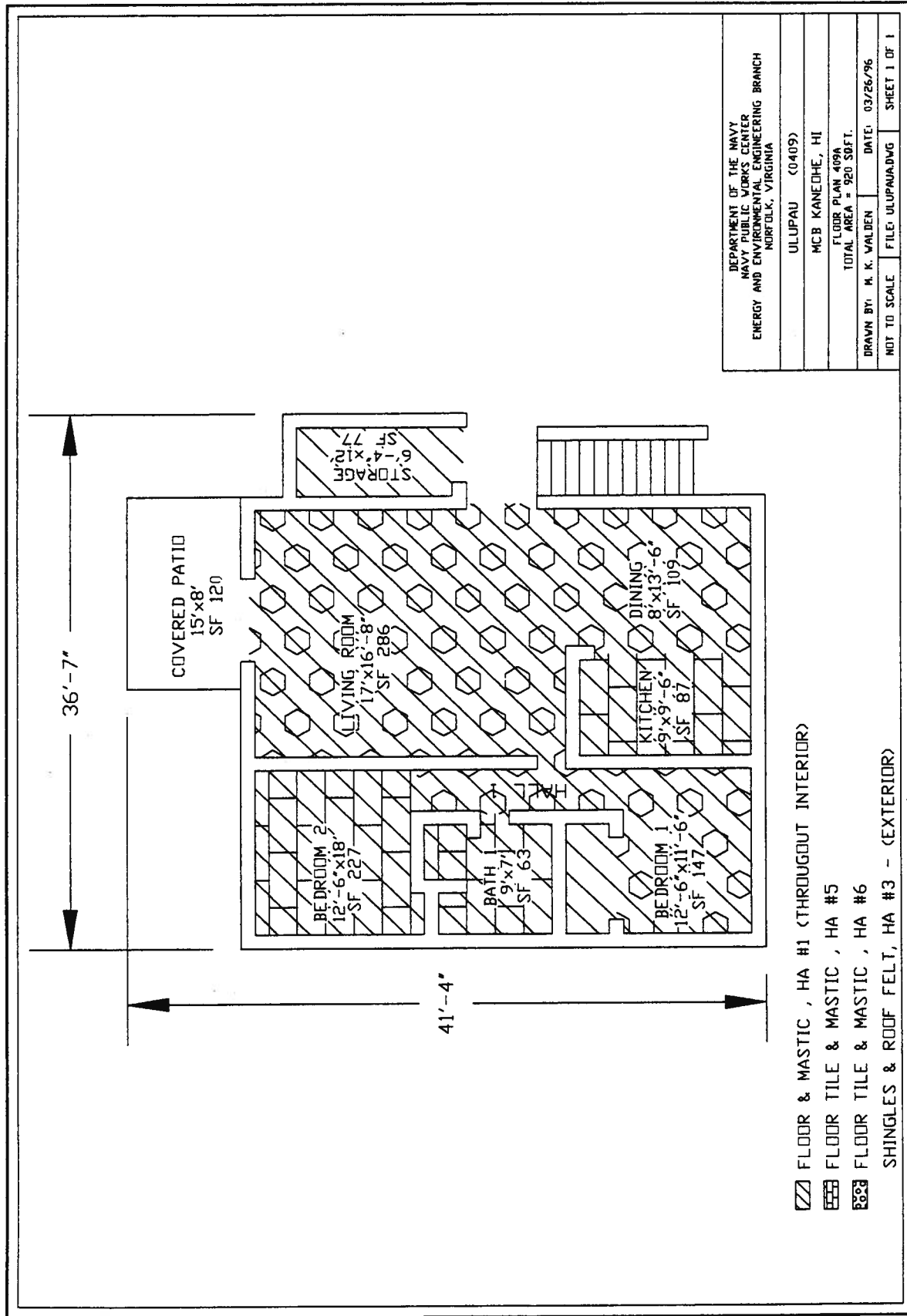
Unit # ²	Address	Floor Plan Type
1	2613-D BORDELON LP	409A
2	2614-A BORDELON LP	409A
3	2614-C BORDELON LP	409A
5	2616-D BORDELON LP	409A
7	2618-B BORDELON LP	409B
8	2622-B BORDELON LP	409A
9	2624-A BORDELON LP	409B
11	2625-B BORDELON LP	409B
13	2627-D BORDELON LP	409B
14	2628-B BORDELON LP	409B
15	2629-A BORDELON LP	409B
16	2630-B BORDELON LP	409B
17	2630-C BORDELON LP	409B
18	2632-D BORDELON LP	409A
19	2633-A BORDELON LP	409A
20	2633-D BORDELON LP	409A
21	2635-B CONNOR LP	409A
22	2637-A CONNOR LP	409B
24	2637-D CONNOR LP	409B
25	2638-A CONNOR LP	409B
26	2638-B CONNOR LP	409B
28	2642-D CONNOR LP	409B
29	2643-D CONNOR LP	409B
30	2644-A CONNOR LP	409B
31	2644-B CONNOR LP	409B
32	2645-A CONNOR LP	409B
33	2645-B CONNOR LP	409B
35	2647-C CONNOR LP	409A
36	2647-D CONNOR LP	409A
37	2648-A CONNOR LP	409A
38	2648-D CONNOR LP	409A
39	2648-E CONNOR LP	409A
40	2650-D CONNOR LP	409A
41	2651-C CONNOR LP	409A
42	2652-D CONNOR LP	409B
43	2654-A CONNOR LP	409B
44	2654-C CONNOR LP	409B





Inspected Housing Units¹

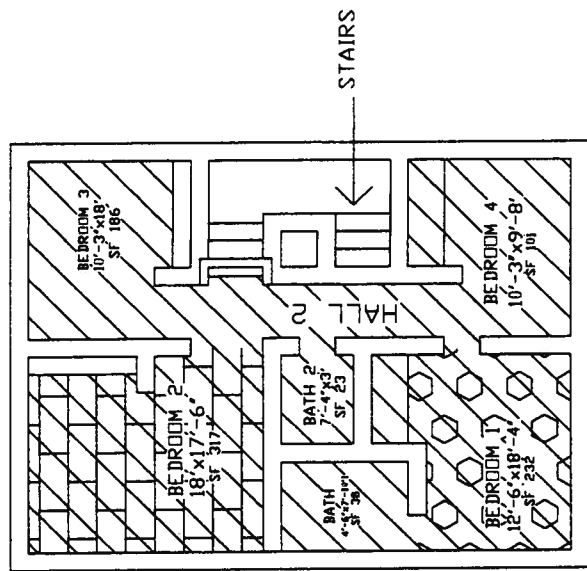
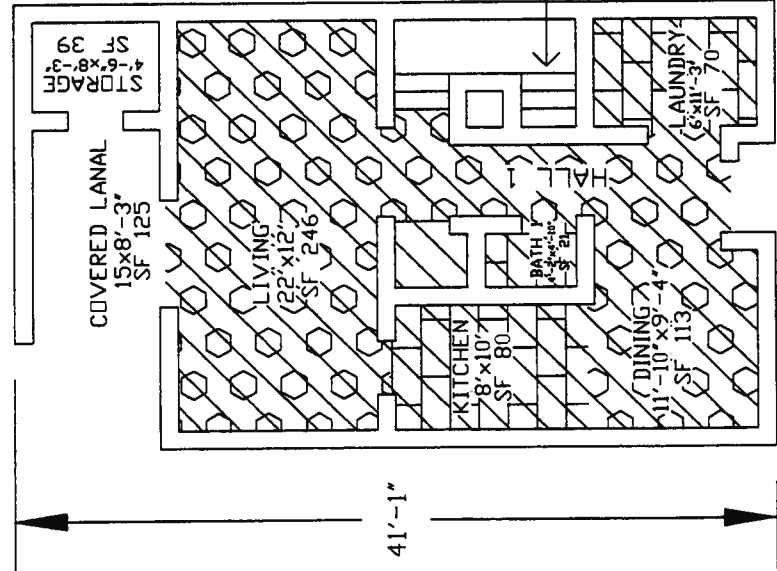
Unit # ²	Address	Floor Plan Type
45	2655-D CONNOR LP	409B
46	2657-C CONNOR LP	409B
47	2659-A CONNOR LP	409B
50	2662-A CONNOR LP	409A
51	2662-D CONNOR LP	409A
52	2678-C DALY PL	409B
53	2664-H DIAS PL	409A
54	2665-A DIAS PL	409B
55	2668-D DIAS PL	409B
56	2669-B DIAS PL	409B
57	2669-C DIAS PL	409B
59	2670-D DIAS PL	409B
61	2674-B DIAS PL	409B
62	2674-C DIAS PL	409B
63	2674-D DIAS PL	409B
64	2675-C DIAS PL	409B
90	2613-G BORDELON LP	409A

¹ The same housing units inspected for asbestos and lead-based paint surveys.

² See Definitions - Appendix II.



-  FLOOR TILE & MASTIC, HA#1 (THROUGHOUT INTERIOR)
-  SHINGLES & ROOF FELT, HA#3 - EXTERIOR
-  FLOOR TILE & MASTIC, HA#5
-  FLOOR TILE & MASTIC, HA#6



2ND FLOOR

1ST FLOOR

DEPARTMENT OF THE NAVY NAVY PUBLIC WORKS CENTER ENERGY AND ENVIRONMENTAL ENGINEERING BRANCH NORFOLK, VIRGINIA			
ULUPAU (0409)			
MCB KANEDHE, HI			
FLOOR PLAN 409 B			
TOTAL AREA = 1250 SQFT.			
DRAWN BY: M. K. WALDEN	DATE: 03/26/96		
NOT TO SCALE	FILE: ULUPAUB.DWG	SHEET 1 OF 1	

APPENDIX II

DEFINITIONS

Abatement - Procedures to control fiber release from ACM in a building or to remove it entirely. These may involve removal, encapsulation, repair, enclosure, and operations and maintenance programs.

Action Responses:

- **Enclosure** - A resilient structure, built (or sprayed) around ACM designed to prevent disturbance and contain released fibers.
- **Encapsulation** - The use of an agent to seal the surface of ACM by means of bridging or penetrating.
- **Removal** - Physical removal of all present ACM for disposal.
- **Operations and Maintenance (O&M)** - A means of handling asbestos in-place as an interim control until permanently removed.

Action Response Time-frame:

- **Short-term** - Recommend hazard minimization of specified ACM as soon as practicable or at time of occupancy change.
- **Interim Control** - Visually inspect all ACM and assess for condition, hazard potential, and any required repairs or maintenance to be performed. This [O&M] is to occur until elimination (removal) of ACM.
- **Renovation** - Abate specified ACM, as numerically prioritized, during future renovation projects.
- **Demolition** - Remove all ACM prior to commencing any demolition of the structure containing the material. Remove material that is friable or would become friable during demolition. Note that AHERA guidelines classify damaged non-friable material as becoming a friable material, during demolition activities.

Asbestos - A generic name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure, are highly fire resistant, and are separable into various fibers.

Asbestos Categories:

- Assumed - A suspected ACM not sampled to maintain the integrity of the component or for worker protection concerns. Built-up roofing is an example of a material assumed to contain asbestos.
- Miscellaneous - Material other than surfacing or thermal systems insulation such as floor tiles, roofing shingles, and composite boards.
- Surfacing - Material that is sprayed-on, troweled-on, surfaces such as acoustical plaster on ceilings and fireproofing materials on structural members.
- Thermal Systems Insulation (TSI)- Material applied to pipes, fittings, boilers, tanks, and ducts to prevent heat loss/gain or water condensation.

Asbestos-Containing Material (ACM) - Any material that contains 1% or more asbestos. Provided in the table at the end of this Appendix is a listing of possible materials sampled during asbestos field inspections (only visible and accessible materials sampled).

Asbestos Types:

Actinolite
 Amosite (Brown)
 Anthophyllite
 Crocidolite - Riebeckite (Blue)
 Chrysotile - Serpentine (White)
 Tremolite

Certified Inspector - A person who has completed a training program certified by the appropriate Federal agency and has met any other requirements for certification or licensing established by such agency.

Community Number - A four-digit numerical designation assigned to the project by the inspection team for record keeping and data management purposes only.

Damage Type:

- D - Deterioration: Damage attributed to degradation mechanisms such as rot, wear, and weathering.
- P - Physical: Damage attributed to impact and abrasive contact.
- W - Water: Damage induced by water or moisture intrusion and degradation.
- N - None

Friable - When dry, a material that crumbles, pulverizes, or reduces to a powder by applying hand pressure.

- High - Material crushed/powdered by minimal hand pressure.
- Moderate - Material crushed/powdered by moderate hand pressure.
- Low - Material crushed/powdered by extreme hand pressure.
- Non - Not able to crush/powder material by hand pressure.

Hazard Potential - A hazard rating (evaluation) tool used to evaluate the ACM potential for hazard to the housing and/or building occupants.

- High - ACM that is highly friable and damaged. This hazard potential category presents the greatest health risk.
- Moderate - ACM that has moderate and/or low friability and is damaged. The hazard priority levels for this hazard potential category are determined by the ACM friability potential and the recommended action responses.
- Low - ACM evaluated to be a minor health risk.

Hazard Priority Levels - Prioritization of hazard potential categories with recommended action response for the ACM.

- Level 1 - Highly friable and damaged ACM. Recommended action response is short-term abatement.
- Level 2 - Moderately friable and damaged ACM. Recommended action response is short-term abatement.

- Level 3 - Damaged ACM with low friability. Recommended action response is short-term repair and O&M.
- Level 4 - Highly and/or moderately friable ACM with no damage. Recommended action response is O&M if the potential for air erosion, vibration, and/or contact is low. If the potential for air erosion, vibration, and/or contact is moderate or high, a short-term action response is required to minimize the condition.
- Level 5 - ACM with low friability and no damage and non-friable ACM. Recommended action response is O&M.

Homogeneous Area Number (HA#) - An area that appears similar throughout in terms of color, texture, and date of material application.

Homogeneous Community - A group of housing units built at the same time utilizing similar materials.

Material Condition:

- Significantly Damaged - More than 25% of the material surface area is deteriorating, cut, torn, blistering, water-stained, crumbling, etc.
- Damaged - Between 1% and 25% of material surface area is deteriorated, cut, torn, blistered, water-stained, crumbling, etc.
- Good - No damage (0%).

Non-Homogeneous Community - Housing units built at different times using different materials.

Operations and Maintenance Annual Cost Factor - A multiplier for calculating annual O&M costs derived from the time estimated for ACM surveillance and record keeping.

# ACM HA	Surveillance (time per unit)	Record Keeping (time per unit)	O&M Annual Cost Factor (time per unit)	Estimated O&M Cost (@ 50.00/hr labor)
1 to 5	0.16	0.50	0.66	\$33.00
6 to 10	0.33	0.50	0.83	\$41.50
11 to 15	0.50	0.50	1.00	\$50.00
15 to 20	0.66	0.50	1.16	\$58.00

Polarized Light Microscopy (PLM) - A method of analyzing bulk samples for asbestos using illumination of the sample with polarized light (light that vibrates in only one plane) and viewed under a light microscope. It determines the amount of asbestos that makes-up a subject material that contains greater than or equal to 1% asbestos.

Potential For Air Erosion, Vibration, Contact:

- High - Continual air flow or movements. The material is continually in the way of maintenance workers and housing occupants.
- Moderate - Noticeable air flow or movements. Maintenance workers are in its vicinity each week and it is accessible to housing occupants.
- Low - No noticeable air flow or movements. Maintenance workers are in its vicinity less than once per month and/or not visible to housing occupants.

Suspect Asbestos-Containing Materials - The following list of materials have been identified as likely to contain asbestos. Each homogeneous area located is sampled for laboratory analysis to determine if the material contains asbestos. See Appendix III of each respective Asbestos Management Plan for a summary of all materials sampled.

Suspected Asbestos-Containing Materials
Blown-in Insulation
Boiler Block or Wearing Surface
Breaching Insulation
Ceiling Tile
Cement Asbestos Insulating Panels
Cement Asbestos Siding
Cement Asbestos Wallboard
Chalkboards
Cooling Tower Baffles or Louvers
Cooling Tower Fill
Damp-proofing
Door Insulation
Drywall
Duct Insulation
Ductwork Taping

Suspected Asbestos-Containing Materials	
Electrical Cloth	
Electrical Ducts	
Electrical Panel Partitions	
Elevator Brake Shoes	
Elevator Equipment Panels	
Elevator Vinyl Asbestos Tile	
Fire Curtains	
Fire Damper	
Flexible Fabric Joints (Vibration Dampening Cloth)	
Flooring, Asphalt Tile	
Flooring, Backing	
Flooring, Vinyl Asbestos	
Flooring, Vinyl Sheet	
Flue, Seam Taping	
HVAC Gaskets	
HVAC Piping Insulation	
Incandescent Recessed Fixtures	
Insulation, Fireproofing	
Insulation, Thermal Sprayed-on	
Insulation, Wiring	
Laboratory Bench Tops	
Laboratory Gloves	
Laboratory Hoods	
Laboratory Oven Gaskets	
Packing or Rope (at penetrations through floors or walls)	
Paints	
Plaster, Acoustical or Decorative	
Plumbing, Equipment Insulation	
Plumbing, Pipe Gaskets	
Plumbing, Piping Insulation	
Putty and/or Caulk	
Roofing, Asbestos Base Felt	
Roofing, Asbestos Finishing Felt	
Roofing, Asphalt Saturated Asbestos Felt	
Roofing, Flashing (plastic cement for sheet metal work)	
Roofing, Flashing (tar and felt)	
Roofing, Reinforced Asbestos Flashing Sheet	
Roof, Paint	
Stage Lighting	
Taping Compounds	

Suspected Asbestos-Containing Materials
Textured Coatings
Valve Packing
Waterproofing, Asbestos Base and Finishing Felt
Waterproofing, Flashing

UIC Number - An alpha-numeric designation assigned to each activity/command by the Department of Defense for record keeping purposes.

Unit Number - A three-digit numerical designation determined and utilized by the inspection team for project management tracking purposes only.

Removal and installation prices include costs for disposal, containment, air monitoring, clean up, lock down, final air clearance and all related supplies.

Standard Asbestos Abatement Costs (FY 96)						
Categories	Materials	Unit of Measure	Cost Per Unit of Measure (\$)		Comments	
			Remove	Install		Total
Surfacing	Flat Surfaces	SF	9.20	3.45	12.65	Add 15% to cost for ceiling tile/grid replacement. Add 20% for gypsum board. Calculate surface square footage of beams and structural members.
	Structural Steel					
	Beams	SF	13.80	3.45	17.25	
	Joists					
Thermal Systems Insulation	Pipe Insulation	2"	11.50	3.45	14.95	
		4"	16.10	4.60	20.70	
		6"	19.55	5.75	25.30	
		8"	23.00	6.90	29.30	
		10"	25.30	9.20	34.50	
	Fittings/Joints	2"	19.55	5.75	25.30	
		4"	35.65	6.90	42.55	
		6"	43.70	8.05	51.75	
		8"	52.90	9.20	62.10	
		10"	58.65	10.35	69.00	
	Duct Insulation	SF	11.50	4.60	16.10	Add 15% for suspended ceilings
	Boiler/Tank Insulation	SF	26.45	13.80	40.25	Add 20% for gypsum ceilings

Standard Asbestos Abatement Costs

(FY 96)

Categories	Material	Uni. of Measure	Cost Per Unit of Measure (\$)			Comments
			Remove	Install	Total	
Miscellaneous	Soil (Crawl Space)	Cubic Yard	402.50	149.50	552.00	Add 20% for crawl spaces w/ less than 3' of clearance.
	Cement Asbestos Paneling	SF	9.20	4.60	13.80	Transite
	Roofing	Asphalt Shingle	8.05	1.15	9.20	
		Built-up		3.45	11.50	
		Asphalt Roll		1.15	9.20	
		Rubber Membrane		3.45	11.50	
		Slate		8.05	16.10	
	Floor Tile/Linoleum/Vinyl Baseboard	SF	4.60	2.30	6.90	Add 50% if flooring material is covered w/ carpet.
	Ceiling Tile	SF	6.90	2.30	9.20	Suspended/Glued-on
	Gypsum	SF	4.60	2.30	6.90	
	Window Glazing (based on SF of window)	SF	17.25	46.00	63.25	Price based on replacement of window.
	Garage Doors	SF	4.05	28.75	32.80	

APPENDIX III

SUSPECT ASBESTOS CONTAINING MATERIAL INSPECTION SUMMARY

Table A - Suspect Asbestos Containing Material

(Listed Numerically by Homogeneous Area #)

Location ¹	Material	HA # ²	ACM ³ (Y/N)	% Asbestos	Type of Asbestos ⁴	Comments
Throughout	FLOOR TILE & MASTIC	1	Yes	5	Chrysotile	
Description: 12" x 12"; Beige speckled pattern						
Throughout	COVE BASE & MASTIC	2	No	0	N/A	
Description: 4" wide; brown						
Exterior	SHINGLES & ROOF FELT	3	Yes	ASSUMED POSITIVE	Unknown	
Description: Light brown; ASSUMED POSITIVE						
Carpport	ROLLED ROOF	4	No	0	N/A	
Description: Brown						
Bedroom 2, Kitchen, Laundry, Bathroom 1	FLOOR TILE & MASTIC	5	Yes	20	Chrysotile	
Description: 12" x 12"; Light blue speckled pattern						
Dining, Hallway 1, Living, Bedroom 1	FLOOR TILE & MASTIC	6	Yes	20	Chrysotile	
Description: 12" x 12"; Dark brown speckled pattern						

¹ See Floor Plans - Appendix I.
², ³, ⁴ See Definitions - Appendix II.

REFERENCE FORM 17

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Family Housing Department

Document Reviewed: Department of Navy, Navy Public Works Center, Energy and Environmental Engineering Branch, Code 333. *Lead Activity Summary, MCB Kaneohe, Kaneohe, HI. August 1997.*

Pages Viewed: Entire Document (see attached)

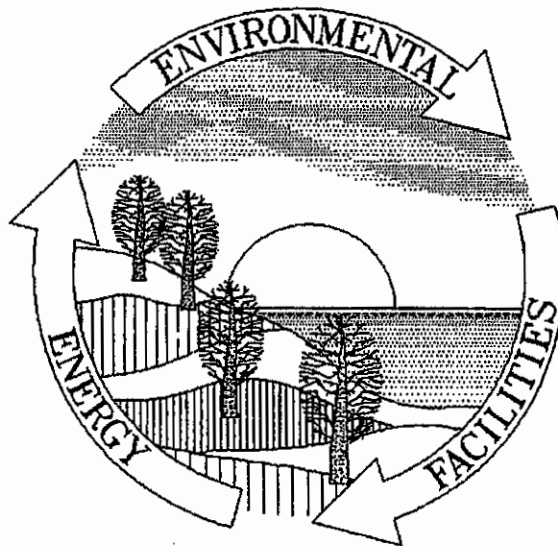
Date Viewed: April 2007

Results: Historical LBP data for MCBH Kaneohe Bay family housing.

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LEAD ACTIVITY SUMMARY

**MCB KANEOHE
KANEOHE, HI**



SPONSORED BY:

Department of the Navy
Commandant of the Marine Corps
(LFF-3) Headquarters, US Marine Corps
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PREPARED BY:

Department of the Navy
Navy Public Works Center
Energy and Environmental Engineering Branch, Code 333
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AUGUST 1997

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EXECUTIVE SUMMARY

The Department of the Navy, attentive to the safety and well-being of its personnel and their families, has initiated a worldwide program to assess Navy and Marine Corps Family Housing. Naval Facilities Engineering Command (NAVFACENGCOM) has retained Public Works Center (PWC) - Norfolk, Virginia to develop and manage the environmental assessment. The Navy Family Housing Lead-Based Paint/Asbestos Inventory Program is outlined in a 09 November 1992 letter from Commander, Naval Facilities Engineering Command.

The assessment provides strategies to ensure the safety of residents and workers from hazards associated with lead-based paint, lead in dust, and lead in soil. The Department of Housing and Urban Development (HUD) guidelines, the Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X), and Requirements for Lead-Based Paint Activities: Proposed Rule (40 CFR Part 74) were generally adopted as assessment protocol.

Certified inspectors performed comprehensive inspections of the interior and exterior of residences, yards, common buildings, and grounds. The objectives of the assessment were to:

- Determine the locations of lead-based paint (LBP) and elevated levels of lead in dust and soil.
- Assess the potential hazards from LBP and elevated levels of lead in dust and soil.
- Prioritize the potential hazards from LBP and elevated levels of lead in dust and soil.
- Specify action responses for LBP and elevated levels of lead in dust and soil.
- Estimate costs for implementation of the action responses.

This document supplements individual community Lead Management Plans for MCB Kaneohe with background information, program practices, and reference material. Each individual management plan provides the inspection parameters, floor plans, test findings and analysis, and recommendations for each specific community. The provided Document Package contains the referenced regulatory standards and lead management documents. It also assists in the development and implementation of a program to control LBP in-place while minimizing potential hazards.

The assessment follows basic protocol and procedures similar to those established by HUD for inspection of public and urban housing. The Program Information and Protocol section of this document describes the assessment testing principles and procedures, and methods employed for data analysis. The Lead Survey Summary section provides a brief description of the survey findings and recommended action responses for each housing community of MCB Kaneohe. For community specific results, technical details, and a breakdown of all analyses and conclusions, consult each respective community Lead Management Plan.

The estimated short-term hazard minimization cost for the lead-based paint (LBP) components, lead in dust, and lead in soil for MCB Kaneohe Housing is \$3,398,954. The estimated cost to develop an effective and proactive Operations and Maintenance (O&M) Program to control LBP in-place while minimizing hazards is \$7,684. The estimated annual cost to maintain the Lead O&M Program is \$157,406. The Cost Estimates section of this document provides a brief overview of the individual costs for each housing community of MCB Kaneohe. For specific community cost details, consult the respective community Lead Management Plan.

The costs for development, implementation, and execution of the Operations and Maintenance Programs described in the MCB Kaneohe Asbestos Activity Summary and Lead Activity Summary documents were calculated independent of one another. Actual implementation and annual execution costs can be reduced if the LBP and Asbestos O&M Programs are established simultaneously and operated in a similar fashion. Combine the annual assessment with regularly scheduled maintenance to reduce the annual O&M costs for these programs.

PARTICIPANTS

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A special thanks to the staff at MCB Kaneohe who assisted PWC - Norfolk, Virginia in completing their project efficiently.

PROGRAM INFORMATION AND PROTOCOL

PROGRAM HISTORY

The Navy Family Housing LBP/Asbestos Inventory Program is outlined in a 09 November 1992 letter from Commander, Naval Facilities Engineering Command (NAVFACENGCOM). The assessment provides strategies to ensure safe living environments for residents and workers. NAVFACENGCOM has retained Public Works Center (PWC) - Norfolk, Virginia to develop and manage this environmental assessment.

The Department of Housing and Urban Development (HUD) Guidelines, the Residential Lead-Based Paint (LBP) Hazard Reduction Act of 1992 (Title X), and Requirements for LBP Activities: Proposed Rule (40 CFR Part 74) were generally adopted as assessment protocol. Certified inspectors performed comprehensive inspections of the interior and exterior of residences, yards, common buildings, and grounds. The inspection determined the presence and location of LBP, elevated levels of lead in dust, and elevated levels of lead in soil. In addition, the inspectors evaluated the physical condition of the painted components and the areas where dust and soil samples were collected to assist in determining the hazard potential. Basic protocol and procedures followed during the assessment are similar to those established by HUD for inspection of public and urban housing. HUD guidelines predicate random testing/sampling of the entire community as a homogeneous area to provide a statistical confidence level of 95%.

BACKGROUND

Lead-Based Paint

LBP is a potential source of lead exposure to children and adults. Chipping or peeling LBP creates a high risk to children via ingestion and to adults if improper cleaning or abatement techniques occur. When high levels of lead build up in a person's body, lead poisoning can occur. Children are very susceptible to lead poisoning due to their increased absorption rate. Lead was first regulated in residential paint in 1972 at 0.5 percent and "banned" in 1978, meaning that paint could contain no more than 0.06 percent lead by dry weight. As a result LBP is evident in millions of homes due to its extensive use prior to 1978. Following identification and confirmation of LBP on a component, only mitigation through interim controls or abatement will ensure the safety of both adults and children.

Lead in Dust

Current studies show the greatest potential for lead poisoning to children is through dust generated from deteriorated LBP and lead contaminated soil. A child's exposure to the lead hazard is primarily attributable to dust ingestion through normal hand to mouth behavior. Adult exposure occurs through inhalation and ingestion of dust. Testing for lead in dust determines potential hazardous areas.

Lead in Soil

Soil with elevated levels of lead can pose a potential human health hazard both directly and indirectly. Children expose themselves directly to lead in soil by hand to mouth behavior. Children or pets can also track this soil into residences and increase the dust lead levels. PWC Norfolk defines the areas around a particular unit as subareas. Those subareas sampled pose the greatest hazard to the occupants and possess at least one of the three following characteristics:

1. The area potentially has an elevated lead content.
2. The area is a source of dust.
3. The area has a particular use causing increased human exposure.

Refer to the document "Preventing Lead Poisoning in Young Children" by the Centers for Disease Control for a detailed history of high blood lead levels and its adverse health effects. Additionally, the document provides supplemental information on the sources and pathways of lead exposure.

TESTING PROCEDURES**Lead in Paint**Sampling Objectives

The objective of the inspection is to determine if potential LBP hazards exist in the community and recommend methods to minimize confirmed hazards. The Department of Housing and Urban Development

(HUD) Guidelines outline the general scheme applied for the units tested.

Sampling and results are provided per community group to coincide with NAVFAC Housing management practices. A homogeneous housing community consists of units with similar age and construction history. PWC Norfolk inspects a statistical representation, based on HUD Guidelines, of the total number of units in each community. Although inspectors do not sample all units, conclusions and recommendations apply to all housing within a community. The HUD Guidelines provide a suggested list of components or surfaces to sample in an inspection. Selection of sample locations is random, but all architectural components are tested.

Data Analysis

A component within a room is determined to be positive for LBP community-wide if at least ten percent of those tested are found to be positive. If the testing results for that same component show there were none identified to be positive then that component is negative community-wide. Lastly, if the testing results for that component show one to nine percent were identified as containing LBP, further analysis is required to make a community-wide determination. This analysis encompasses statistical comparison of that component with the same and similar components at different levels. The first level of analysis compares the component to similar components in the same room. The second level of analysis compares the component to the same component but within all other rooms. The third, and last level compares the component to similar components in all other rooms.

Lead In Dust

Due to the correlation that exists between lead contaminated soil and dust, the units randomly chosen for lead in dust inspection are also inspected for lead in soil.

Sampling Objectives

Inspectors collect dust samples from four rooms within each randomly chosen unit. HUD protocol dictates the minimum number of randomly selected units within a housing community and the number of dust samples. The sampled rooms are the living room, kitchen, and two bedrooms. Children's bedrooms have sampling priority. Two component areas within these rooms are sampled (floor and window well/sill).

Data Analysis

HUD's Guidelines for Hazard Identification and Abatement is the standard adopted for dust analysis. All dust samples require laboratory analysis. Atomic Absorption Spectrometry (AAS) and Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) methods produce data expressed as total mass of lead per surface area sampled. There are no federal standards governing the action level of lead in dust at the present time. At present, HUD recommends the following guidelines for specific surfaces:

Floors:	100 micrograms per square foot
Window Sills:	500 micrograms per square foot
Window Wells:	800 micrograms per square foot

Lead In Soil

Due to the correlation that exists between lead contaminated soil and dust, the units randomly chosen for lead in soil inspection are also inspected for lead in dust.

Sampling Objectives

Inspectors collect soil samples from subareas around randomly selected units. HUD protocol dictates the minimum number of randomly selected units within a housing community. The following are examples of soil sample subareas:

- Base of a building foundation
- Downspout drop areas
- Garden areas
- Household pet play/sleeping areas
- Painted fence-rows
- Pathways created by pedestrian/vehicular traffic
- Along paved areas, alleys, parking lots, roadways, etc.
- Play/recreational areas

Data Analysis

Atomic Absorption Spectrometry (AAS) or Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) laboratory analysis methods determine the lead concentration in the soil samples. All subareas are

considered accessible to children, therefore the EPA's guidance of 400 ppm was adopted as the action level.

The EPA recommends soil abatement when lead levels are found at 5000 ppm or more in residential bare soil. The agency's recommended action responses to these lead in soil levels is removal and replacement, and the use of permanent covers (e.g., paving). Until further studies, aggressive exposure reduction activities are recommended for the areas with lead in soil levels above 5,000 ppm. The protocol used for this assessment investigated correlation between lead in paint, lead in dust, and lead in soil. A complete soil contamination study is recommended to accurately identify all soil contamination within the community.

REFERENCE DOCUMENTS

Appendix III contains a list of reference material regarding the policy of the Navy Family Housing LBP/Asbestos Inventory Program and regulations for lead control. Also listed are the various documents concerning the inspection, control, and abatement of lead. The provided Document Package contains applicable federal regulations and guidance documents that apply to LBP, lead in dust, and lead in soil inspections.

All aspects of the individual community management plans utilize the respective governing regulatory documents as a basis for action. Although these documents often contradict one another, this Action Summary combined with the accompanying management plans provides a safe and cost effective means to resolve environmental issues related to lead hazards.

ACTIVITY DESCRIPTION

A summary of the MCB Kaneohe inspection is in Table 1 below. Provided in each community management plan are floor plans along with the list of the homes inspected.

- Activity UIC Number: M00318¹
- Inspection Dates: May - November 1996

Table 1 - Inspection Parameters					
Housing Type	Total # of Units	# of Units Inspected			Year(s) of Construction
		Paint	Dust	Soil	
Hilltop (0399)					
Single Family	23	20	5	5	1941
NCO Row (0400)					
Duplexes	8	8	5	5	1941
Hillside (0401)					
Duplexes	6	6	3	3	1957
Flats	4	4	2	2	1957
Manning Court (0402)					
2 Bedroom Flats	12	7	3	3	1964
3 Bedroom Flats	24	20	2	2	1959
Mokapu Court (0403)					
Duplexes	8	8	4	4	1957
Single Family	1	1	1	1	1957
Capenanti (0404)					
Duplexes	645	56	23	23	1959
FY63 Housing (0405)					
Multiplexes	150	48	8	8	1964
FY64 Housing (0406)					
Townhouses	100	46	7	7	1965
FY65 Housing (0407)					
Multiplexes	230	52	12	11	1966
Rainbow (0408)					
Apartments	320	53	15	12	1974

Table 1 - Inspection Parameters

Housing Type	Total # of Units	# of Units Inspected			Year(s) of Construction
		Paint	Dust	Soil	
Ulupau (0409)					
Apartments	350	54	15	11	1976
Nani Ulupau (0410)*					
Multiplexes	40	0*	5	5	1991
Totals	1921	383	110	102	
CDC's & Community Centers (0411)					
Hilltop CDC	2	2	1	1	1952
Lawrence St. CDC	1	1	1	1	1942
Youth Center	1	1	1	1	n/a
Totals	4	4	3	3	
Playgrounds (0500)					
Playgrounds	64	64	0	64	n/a

¹ See Definitions - Appendix I.

Note: community numbers assigned by PWC Norfolk appear in parentheses next to community names. See Definitions - Appendix I for more information.

* Nani Ulupau was constructed after 1984, therefore, the community was inspected under a modified protocol as directed by Naval Facilities Engineering Command. This protocol dictates that asbestos, dust, and soil will be inspected using the number of units in accordance with the dust and soil inspection table published by HUD. There will be no paint inspections in these units.

LEAD SURVEY SUMMARY

The fundamental step in the implementation of any plan to reduce lead hazards is a public relations package. The public relations package provides general information regarding the lead hazard minimization plan, an approach to implement the plan, and resident education guidance. Lead hazard minimization will include paint surface restoration, HEPA vacuuming/tri-sodium phosphate (TSP) cleaning of horizontal surfaces for lead in dust contamination, and mulching to provide groundcover for elevated lead in soil conditions. Initial public awareness meetings with the residents and workers are of utmost importance. The MCB Kaneohe Document Package contains information on this subject

FINDINGS AND ANALYSIS

Lead in Paint

NOTE: Glazed ceramic components (tile) analyzed as part of the lead in paint survey do not represent the same potential hazard to human health as lead-based paint surfaces. The lead contained in the glaze is primarily a concern during maintenance, renovation, or demolition actions that may crush or pulverize the ceramic component. For actions involving glazed ceramic identified to contain lead, implement procedures to manage and control any potential exposure.

Vinyl components (siding, soffit, fascia, etc.) determined to be positive as part of the lead in paint inspection may actually cover the LBP surfaces. In such cases, maintain these vinyl coverings as enclosures for the LBP surfaces until a renovation or demolition activity.

Hilltop: Lead-based paint was identified throughout the interiors and exteriors of the housing units. The majority of the LBP surfaces were assessed as intact at the time of this survey. Some of the LBP components were identified with paint surface damage, increasing the potential hazard.

NCO Row: Lead-based paint was identified on several surfaces within the community. The majority of these LBP surfaces are located on interior components. Some of the LBP components were identified with paint surface damage at the time of this assessment.

Hillside: Lead-based paint was identified on some surfaces within the community. The LBP components are primarily located in the exterior, carport, and porch areas. The majority of these LBP surfaces were assessed as intact, however, a few contained paint surface damage.

Manning Court: Lead-based paint was identified on nine surfaces within the community. The majority of these LBP surfaces were intact, however, two were assessed to have damage at the time of inspection.

Mokapu Court: Lead-based paint was identified on some surfaces within the community. One component, the exterior doors, contained damaged LBP at the time of this assessment.

Capehart: Lead-based paint was identified on several surfaces within the community. Some of these LBP components were identified with paint surface damage at the time of this assessment.

FY63 Housing: Lead-based paint was identified on several surfaces within the community. Some of these LBP components were identified with paint surface damage at the time of this assessment.

FY64 Housing: Lead-based paint was identified on some surfaces within the community. Some of these LBP components were identified with paint surface damage at the time of this assessment.

FY65 Housing: Lead-based paint was identified on some surfaces within the community. The majority of these LBP components are contained on the exterior of the housing units. Most of the LBP components identified were assessed to have some paint surface damage.

Rainbow: No lead-based paint was found based upon this assessment.

Ulupau: No lead-based paint was found based upon this assessment.

Nani Ulupau: No lead-based paint inspection performed based on year of construction for this community.

Hilltop CDC (Bldg 579 & 3022): Lead-based paint was identified on several interior and exterior surfaces at the CDC. The majority of these LBP surfaces were identified as intact at the time of assessment.

Lawrence Street CDC (Bldg 1391): Lead-based paint was identified on some surfaces in the CDC. The majority of these LBP surfaces were identified as intact at the time of assessment.

Youth Center (Bldg 5082): No LBP was found based upon this assessment.

Playgrounds: Two pieces of playground equipment at separate locations were found to contain LBP. This includes the yellow pole at 1721 Lawrence Drive and the yellow slide at 2080 Campion. These LBP surfaces were identified as damaged at the time of inspection.

Lead in Dust

Hilltop: One of the 37 dust samples collected was found to contain lead in dust above the corresponding action level. The positive dust sample was located in 525 Reeves and is considered an isolated case within the community.

NCO Row: The samples analyzed did not have levels that exceeded the corresponding action limits. The presence of lead-based paint, however, creates the potential for elevated lead in dust levels if not properly maintained.

Hillside: One of the forty dust samples collected was found to contain lead in dust above the corresponding action level. The positive dust sample was located in 1205-A Yarnell and therefore is considered an isolated case within the community. The presence of lead-based paint creates the potential for additional elevated lead in dust levels if not properly maintained.

Manning Court: The samples analyzed did not have levels that exceeded the corresponding action limit. The presence of lead-based paint, however, creates the potential for elevated lead in dust levels if not properly maintained.

Mokapu Court: One of the forty-five samples taken was found to contain lead in dust above the corresponding action level. The positive dust sample was located in 1221-A Mokapu Court and therefore is considered an isolated case within the community.

Capehart: Nine of 184 dust samples collected were found to contain lead in dust above the corresponding action level. Consider the presence of leaded dust above the action limits a potential hazard to the occupants of the home.

FY63 Housing: One of the sixty-four dust samples was found to contain lead in dust above the corresponding action level. The positive dust sample was located in 2354-B Moses Street and therefore is considered an isolated case within the community.

FY64 Housing: The samples analyzed did not have levels that exceeded the corresponding action limit. The presence of lead-based paint creates the potential for elevated lead in dust levels if not properly maintained.

FY65 Housing: The samples analyzed did not have levels that exceeded the corresponding action limit. The presence of lead-based paint creates the potential for elevated lead in dust levels if not properly maintained.

Rainbow: Three of the 72 dust samples collected were found to contain lead in dust above the corresponding action level. Sources other than LBP or lead in soil may have contributed to the lead in dust contamination based on the findings of this assessment.

Ulupau: The samples analyzed did not have levels that exceeded the corresponding action limit.

Nani Ulupau: The samples analyzed did not have levels that exceeded the corresponding action limit. No action is required.

Hilltop CDC (Bldg 579): The samples analyzed did not have levels that exceeded the corresponding action limit.

Lawrence Street (Bldg 1391): The samples analyzed did not have levels that exceeded the corresponding action limit.

Youth Center (Bldg 5082): The samples analyzed did not have levels that exceeded the corresponding action limit.

Lead in Soil

Hilltop: The samples analyzed did not have lead levels that exceeded the action limit. The presence of exterior lead-based paint, however, creates the potential for elevated lead in soil levels if not properly maintained.

NCO Row: The samples analyzed did not have lead levels that exceeded the action limit. The presence of exterior lead-based paint, however, creates the potential for elevated lead in soil levels if not properly maintained.

Hillside: The samples analyzed did not have lead levels that exceeded the action limit. However, the presence of exterior lead-based paint creates the potential for elevated lead in soil levels if not properly maintained.

Manning Court: The samples analyzed did not have lead levels that exceeded the action limit. The presence of exterior lead-based paint, however, creates the potential for elevated lead in soil levels if not properly maintained.

Mokapu Court: The samples analyzed did not have lead levels that exceeded the action limit. The presence of exterior lead-based paint, however, creates the potential for elevated lead in soil levels if not properly maintained.

Capehart: One of 69 samples collected was found to contain lead in dust above the 400 ppm action level. This is considered an isolated case and not representative of the entire community. This specified area requires a localized action to ensure the potential hazard is minimized.

FY63 Housing: The samples analyzed did not have lead levels that exceeded the action limit. The presence of exterior lead-based paint, however, creates the potential for elevated lead in soil levels if not properly maintained.

FY64 Housing: The samples analyzed did not have lead levels that exceeded the action limit. The presence of exterior lead-based paint creates the potential for elevated lead in soil levels if not properly maintained.

FY65 Housing: One of 42 samples collected was found to have elevated lead in soil above the 400 ppm action level. This is considered an isolated case and not representative of the entire community. This specified area requires a localized action to ensure the potential hazard is minimized.

Rainbow: The samples analyzed did not have lead levels that exceeded the action limit.

Ulupau: The samples analyzed did not have lead levels that exceeded the action limit.

Nani Ulupau: The samples analyzed did not have lead levels that exceeded the action limit. No action is required.

Hilltop CDC (Bldg 579 & 3022): The samples analyzed did not have lead levels that exceeded the action limit.

Lawrence Street (Bldg 1391): Two of the four composite soil samples collected were found to contain lead above the 400 ppm action level. Lead in soil is a potential hazard to employees and occupants of the building.

Youth Center (Bldg 5082): The samples analyzed did not have levels that exceeded the corresponding action limit.

Playgrounds: Lead in soil sampling was conducted at sixty-four playareas. No lead in soil above the action level was found. The presence of LBP on playground equipment, however, creates the potential for elevated lead in soil levels if not properly maintained.

RECOMMENDATIONS

Lead in Paint

Lead-based paint was identified within MCB Kaneohe housing. At the time of assessment some of the surfaces were found to have LBP existing in a damaged condition. These areas are considered short-term response items and are to be restored or removed (which ever is more cost effective) during the short-term period. In addition, all identified LBP components are to be visually re-assessed for damage. Include newly identified damaged components with previously identified damaged components listed in the short-term section of each community Lead Management Plan.

The objective is to reduce human exposure or likely exposure to LBP hazards through proper paint film stabilization techniques. HUD specifically outlines how to successfully stabilize paint films. The steps from the Guidelines are listed below.

- Eliminate any exterior leaks in the building envelope (e.g., roofing leaks, gutter or downspout problems, missing or damaged doors, roof flashing, missing opening trim, missing glass in windows, defective or missing caulk and glazing, loose fasteners).
- Eliminate any interior water leaks (e.g., plumbing leaks; clogged condense drip lines for air conditioners; missing water pans for hot water heaters; inadequately ventilated attic spaces; clogged bathtub drains; missing tile, grout, or caulking in bathtub drains; windows that won't close completely).
- Select and implement an appropriate Worksite Preparation Level.

- For exterior work, collect soil samples before the work begins (unless soil sampling has already been completed for a risk assessment). These samples need not be analyzed unless clearance samples show soil lead are above applicable clearance standards.
- Repair all rotted structural, siding, or railing components; defective plaster; missing door hardware; loose siding or trim; and loose wallpaper.
- Prepare surface by wet scraping or wet sanding. Do not remove paint by burning or torching, power sanding without HEPA attachments, or abrasive blasting. Dry scraping and chemical strippers with methylene chloride are not recommended.
- Clean, degloss, neutralize, and rinse surfaces. Surfaces should be dry before priming or repainting.
- Select primer and topcoat by considering longevity, moisture resistance, and organic compound content with low volatility. Paint film stabilization involves the application of at least two coats (the primer and the topcoat). Use a primer/topcoat system from the same manufacturer to ensure compatibility.
- Apply all paints at appropriate thickness or according to manufacturer's directions. Apply paint only during proper temperature, wind, and humidity conditions. Allow sufficient time for each coat to dry fully.
- Conduct final cleanup according to Chapter 14 of HUD Guidelines.
- At the end of the lead hazard control project, have a certified inspector technician or risk assessor conduct a clearance examination and provide appropriate documentation or statements of LBP compliance.
- Conduct reevaluations annually as indicated in the site-specific schedule (Table 6.1 of HUD Guidelines). Perform ongoing maintenance of paint and restabilize paint whenever deterioration is discovered.

The process provided above was taken directly from HUD Guidelines, Chapter 11 - Interim Controls. This information is provided for the reader who may not have immediate access to a copy of the HUD Guidelines. Refer to the HUD Guidelines prior to executing any paint film stabilization.

Lead in Dust

Elevated lead in dust was found within MCB Kaneohe housing. Lead in dust poses a potential hazard to the residents of the community. As defined and outlined by HUD Guidelines, clean all interior horizontal surfaces in the community. The following is the HUD guidance for removal of leaded dust (Chapter 11). For additional information, an O&M Document with step-by-step procedures is available from the National Institute of Building Sciences (NIBS).

- Correct any known or suspected LBP hazards before dust removal.
- Visually inspect other dust traps, such as radiators and floor grates. If visible dust is found, the component should be cleaned.
- Distribute educational materials prepared by EPA or State or Local Government agencies to residents. These materials should warn residents that carpets, drapes, and upholstered furniture may be contaminated and should be cleaned or replaced.
- Prepare the work area with Interior Worksite Preparation Level 1 or other proven containment method (Chapter 8 of HUD Guidelines). If contaminated carpet is to be removed, the work area should be contained with Interior Worksite Preparation Level 3 or 4 (do not put down plastic sheeting on floors for carpet removal).
- Clean all horizontal surfaces, beginning with HEPA vacuuming, followed by wet washing with a cleaning agent suitable for lead removal, such as a lead-specific cleaner or tri-sodium phosphate detergent. Test the cleaning solution before using to determine if it will discolor or damage surfaces to be cleaned.
- Begin dust removal at the top rear room in the dwelling, working forward and down. Within rooms, start with the highest horizontal surface and work down. Clean windows, other dust traps, and finally the floors. When practical, clean dirty areas last within room to avoid spreading dust.
- Place the HEPA vacuum on a smooth, hard surface or on a sheet of plastic during operation. Remove HEPA filters and bags off-site (not inside dwelling) in a controlled environment. Vacuum and bags should be made by the same manufacturer.
- During wet cleaning, replace rags, sponges, and mops frequently (at least once per dwelling). Use a two-bucket system for floors: one for the cleaning solution and the other for rinsing. Change the wash water at least once in each room.
- Clean until no surface dust is visible. After cleaning rinse with clean water and a new sponge or cloth.
- To clean area rugs, HEPA vacuum the top side with a beater bar or agitator attachment at a rate of 1 minute for each 10 square-foot area. Fold the rug in

half and HEPA vacuum the backing of half the carpet without using the beater bar at a rate of 1 minute per 10 square feet. HEPA vacuum the exposed floor beneath the carpet, the bottom of the carpet, and the pad (if there is one), and fold the rug back into its original position. Repeat the process for the other half of the rug. Finally, HEPA vacuum the top side again with the beater bar at a rate of at least 2 minutes per 10 square feet.

- For wall-to-wall carpeting that cannot be folded over, HEPA vacuum at a rate no faster than 2 minutes per 10 square feet in a side-to-side direction, followed by another pass at the same rate in a direction perpendicular to the direction of the first vacuuming, for a 4 minutes per 19 square feet. For wall-to-wall carpeting, it is not feasible to clean the floor underneath the carpeting.
- Conduct clearance dust wipe sampling on rugs or furnishings that were cleaned to determine if the cleaning was effective.
- To clean other upholstered furnishings, HEPA vacuum each surface three to five times.
- Clean drop ceilings or the ductwork for forced air systems only when they are expected to be disturbed. HEPA vacuum and wet clean air vents or registers. Replace air filters in the forced air systems at the time of cleaning. have a certified inspector technician or risk assessor conduct a clearance examination. Repeat cleaning if necessary. Conduct periodic reevaluations.

The process provided above was taken directly from HUD Guidelines, Chapter 11 - Interim Controls. This information is provided for the reader who may not have immediate access to a copy of the HUD Guidelines. Refer to the HUD Guidelines prior to executing any lead in dust clean-up

Lead in Soil

Elevated lead in soil was found at MCB Kaneohe housing. Restore groundcover and/or mulching over the elevated lead subareas throughout each community. Notify community occupants of the elevated lead in soil situation. Include general information regarding lead hazards in the resident notification. Implement the interim controls outlined by the HUD Guidelines. These guidelines are provided below. For additional information, an O&M Document with step-by-step procedures is available from the National Institute of Building Sciences (NIBS).

- Use water to contain dust and clean equipment to prevent dispersion of lead
- Select an appropriate soil interim control, which may include impermanent surface coverings or land use controls.
- Impermanent surface coverings, including grass (as seed or sod), or other ground covers (e.g., ivy), artificial turf, bark, mulch, and gravel may not

be permanent. If the area to be controlled is heavily traveled, surface coverings such as grass are not appropriate.

- If grass is selected, consult with the local agriculture extension service or a reputable local nursery to determine what grasses are appropriate for the locale, soil type, and sun/shade characteristics. Properly prepare the soil prior to seeding or sodding.
- If bark or gravel is selected, apply the covering a least 6 to 12 inches deep. New bark, gravel, or other materials should not contain more than 200 $\mu\text{g/g}$ of lead. These materials should be tested before use unless previous testing data are available.
- If the soil is in a public recreation area, comply with Consumer Product Safety Commission standards on acceptable surface coverings in play areas.
- Land use controls include fencing, warning signs, creation of alternative play areas such as decking), and thorny bushes.
- Install surface coverings and/or land use controls. For live ground covers (including grass), it is imperative that they are properly watered during the first 3 months and adequately maintained thereafter. Automatic sprinkler systems are appropriate for large areas.
- Control water erosion by proper grading and installation of drainage channels.
- Control wind erosion by periodic watering, windbreaks, or foot-traffic controls.
- Provide walk-off doormats at all entryways to reduce the tracking of contaminated dust and soil into the dwelling.
- Have a certified risk assessor or inspector technician conduct a clearance examination and provide the necessary documentation.
- Perform ongoing maintenance and monitoring of soil coverings and land use controls. Reevaluations of the surfaces should be conducted by a certified risk assessor or inspector technician based on the specific reevaluation schedule for the property.
- If ongoing monitoring or reevaluations show that bare soil remains or reappears, interim controls are not effective. Soil abatement should be conducted, unless other interim controls can be shown to be feasible for the specific site.

The process provided above was taken directly from HUD Guidelines, Chapter 11 - Interim Controls. This information is provided for the reader who may not have immediate access to a copy of the HUD Guidelines. Refer to the HUD Guidelines prior to executing any lead in soil actions.

Short-term

Develop an Operations and Maintenance (O&M) Program to successfully manage potential lead hazards in-place. Refer to HUD Guidelines for specific measures to take when establishing an O&M Program. Periodic O&M procedures will help minimize the hazard potential from LBP, lead in dust, and lead in soil over the long run versus performing abatement. Disclose to residents the presence and location of any LBP while providing education of potential health hazards which are associated. Inform residents to contact the O&M Manager upon any change in condition to LBP components. This type of reporting is to supplement O&M assessment not replace it.

Because of the interrelationship between LBP, lead-contaminated dust, and lead-contaminated soil (e.g., lead in paint can contribute to lead in dust and soil, lead in soil can contribute lead to interior dust, etc.), it is important that the sources of lead be considered in proper order when conducting response activities. In general, lead hazards should be addressed in the following order:

1. Exterior paint (including playground equipment)
2. Soil (including playgrounds)
3. Interior paint
4. Interior dust

This best avoids potential recontamination problems among the three media. Exceptions should be made when there will be delays in addressing a source or when levels in one medium (such as interior dust) are clearly hazardous and immediate actions are needed to protect health.

Interim Control

Use interim controls to successfully minimize risks associated with the identified potential lead hazards within the community. Listed below are several fundamental interim control measures. Refer to HUD Guidelines Chapter 11 for a detailed explanation and further guidance.

- Repair all rotten or defective substrates that could lead to rapid paint deterioration.
- Paint film stabilization.
- Friction and impact surface treatments.
- Treat friction and impact surfaces such as windows, doors, stair treads, and floors when they are generating LBP chips or excessive levels of leaded dust that cannot be controlled with ordinary cleaning.
- Treat protruding, accessible surfaces such as interior window sills where LBP may be present and there is either visual or reported evidence that children are mouthing or chewing them.
- Treat all bare soil containing excessive levels of lead.
- Dust removal and control - clean surfaces to reduce levels of leaded dust to acceptable levels, including cleaning carpets, if they are contaminated.
- Educate residents and maintenance workers on how to avoid lead poisoning.
- Conduct reevaluations by certified individuals and ongoing monitoring by residents

Renovation

During upcoming renovation projects, incorporate the recommended abatement action response for all LBP components present in the proposed renovation area. Refer to the ranking scheme provided for the recommended abatement action response and priority for each LBP component. The Occupational Safety and Health Administration (OSHA) regulates the occupational exposure to inorganic lead. OSHA standards define the airborne lead exposure limits for workers.

Depending upon the scope of the particular renovation project, the overall cost of the project may be reduced by performing additional testing prior to commencing the renovation. The supplemental testing will allow exact specification of individual LBP components per unit that require abatement.

Demolition

During a demolition phase, OSHA standards regulate the occupational lead exposure and define the airborne lead exposure limits for workers. The Resource Conservation and Recovery Act (RCRA) is the basic Federal law governing waste disposal. RCRA distinguishes between solid waste and hazardous waste.

In determining whether a waste is hazardous or non-hazardous, contact the Environmental Compliance Office or housing for the latest Federal, State and landfill requirements.

COST ESTIMATES

The following table is a summary of the estimated short-term action response and O&M costs to control the LBP components and hazards identified during the assessment of MCB Kaneohe. The short-term costs, identified by individual housing community, are the costs to mitigate high priority level items. The community estimates are based on total surface restoration for each identified component extrapolated throughout all the units in the community. The O&M One-time Activity Cost is the estimated cost to develop and implement a program for in-place management and control of LBP components and associated hazards. This cost mainly consists of LBP training required for housing and maintenance personnel. The Annual Community Costs are the cost estimates to execute the O&M program in each individual community. The number of LBP components and hazards located and evaluated during the assessment of each community determine this cost. For specific community cost details, consult the respective community Lead Management Plan.

ACTIVITY COST ESTIMATE	
Short-Term	
Hilltop	41,048
NCO Row	5,675
Hillside	3,640
Manning Court	10,808
Mokapu Court	1,334
Capehart	2,570,636
FY63 Housing	173,237
FY64 Housing	60,595
FY65 Housing	379,500
Rainbow	151,005
CDC's & Youth Center	1,476
Short-Term Cost Total	\$ 3,398,954

ACTIVITY COST ESTIMATE	
Operations and Maintenance Program	
MCB Kaneohe O&M One-time Activity Cost	\$ 7,684
Hilltop Annual Community Cost	6,484
NCO Row Annual Community Cost	2,034
Hillside Annual Community Cost	1,808
Manning Court Annual Community Cost	4,012
Mokapu Court Annual Community Cost	1,723
Capehart Annual Community Cost	86,415
FY63 Housing Annual Community Cost	20,606
FY64 Housing Annual Community Cost	9,628
FY65 Housing Annual Community Cost	21,797
Rainbow Annual Community Cost	2,204
CDC's & Youth Center Annual Cost	695
Annual Activity O&M Cost	\$ 157,405

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REFERENCE FORM 18

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *Lead Management Plan, FY63 Housing, Marine Corps Base Kaneohe, Kaneohe, HI.* Prepared by Department of the Navy, Navy PWC, Energy and Environmental Engineering Branch, Norfolk, VA. November 1996

Pages Viewed: Entire Document (See attached sections)

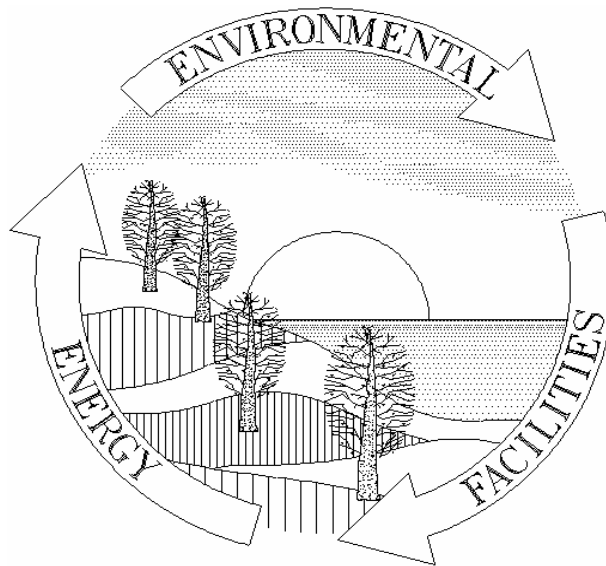
Date Viewed: April 2007

Results: Information incorporated into the ECP.

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LEAD MANAGEMENT PLAN

FY63 HOUSING MARINE CORPS BASE KANEOHE KANEOHE, HI



SPONSORED BY:

Department of the Navy
Commandant of the Marine Corps
(LFF-3) Headquarters, US Marine Corps
2 Navy Annex, Washington, D.C. 20380-1775

PREPARED BY:

Department of the Navy
Navy Public Works Center
Energy and Environmental Engineering Branch, Code 333
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

NOVEMBER 1996

NOTE: This document is intended to be a working management plan for FY63 Housing. Refer to the Lead Activity Summary provided for all pertinent program information.

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LABORATORY SERVICES

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A special thanks to the housing staff at MCB Kaneohe who assisted PWC - Norfolk, Virginia in completing their project efficiently.

COMMUNITY DESCRIPTION

A summary of the FY63 Housing inspection is below in Table 1. Provided in Appendix I is a listing of the housing units inspected.

- **Community Number:** 0405¹
- **Activity UIC Number** M00318¹
- **Inspection Dates:** June 1996

Table 1 - Inspection Parameters							
Housing Type	Square Footage	Total # of Units	# of Units Inspected			Floor Plan Type ²	Year(s) of Construction
			Paint	Dust	Soil		
Multiplex Homes							
3 Bedroom	982	150	35	8	8	K13H I	1964
3 Bedroom	1140		3	0	0	K13G II	1964
3 Bedroom	1346		2	0	0	K13G III	1964
4 Bedroom	1140		6	0	0	K13H IV	1964
4 Bedroom	1318		2	0	0	K13G V	1964
Totals	177780	150	48	8	8		
¹ See Definitions - Appendix II.							
² See Floor Plans - Appendix I.							

FINDINGS AND ANALYSIS

The primary objective of the lead assessment of the FY63 Housing community is to determine if a potential lead-based paint (LBP) hazard exists in the community and recommend methods to minimize all potential hazards. The Department of Housing and Urban Development (HUD) Guidelines outline the general scheme applied for the assessment testing protocol.

HUD surveys indicate that lead in dust is the major route for lead exposure for children. Lead in dust is primarily the result of deteriorating LBP. Soil contaminated with lead from weathering, chalking, and deterioration of exterior LBP can contribute to the dwelling's interior lead in dust levels by being tracked into living areas. HUD surveys confirm a relationship between the presence of LBP with lead in dust and lead in soil. The surveys also list other potential sources of lead. The scope of this assessment is LBP and its associated hazards; however, the MCB Kaneohe Lead Activity Summary document does contain a discussion of the other potential sources for lead. For this LBP assessment, the analysis of LBP, lead in dust, and lead in soil in residential environments determine the overall lead hazard potential to the residents and workers of the FY63 Housing community.

A component within a room is determined to be positive for LBP community-wide if at least ten percent of those tested are found to be positive. If the testing results for that same component show there were none identified to be positive then that component is negative community-wide. Lastly, if the testing results for that component show one to nine percent were identified as containing LBP, further analysis is required to make a community-wide determination. This analysis encompasses statistical comparison of that component with the same and similar components at different levels. The first level of analysis compares the component to similar components in the same room. The second level of analysis compares the component to the same component in all other rooms. The third and last level compares the component to similar components in all other rooms. All representative interior and exterior components were analyzed to determine the presence of LBP.

NOTE: Glazed ceramic components (tile) analyzed as part of the lead in paint survey do not represent the same potential hazard to human health as lead-based paint surfaces. The lead contained in the glaze is primarily a concern during maintenance, renovation, or demolition actions that may crush or pulverize the ceramic. For actions involving glazed ceramic identified to contain lead, implement procedures to manage and control any potential exposure.

LEAD IN PAINT

Lead-based paint was identified on several surfaces within the community. Some of these LBP components were identified with paint surface damage at the time of this assessment.

The lead-based paint found within the community represents several levels of hazard potential. The assigned prioritization levels located in the left-most column of Table 2, are defined in Appendix II. Prioritization levels 1 through 4 are shown in the short-term action response portion of Table 2. These four levels represent damaged lead-based painted surfaces. The potential hazard level associated with the presence of this damaged lead-based paint is moderate to high as defined in Appendix II. Prioritization levels 5 through 8 represent lead-based paint that is intact. These levels are shown in the Renovation section of Table 2. These levels represent a low hazard to the occupant. Appendix III (Table P - Lead in Paint Inspection Summary) provides a composite summary of the inspection results.

LEAD IN DUST

A total of eight randomly selected units were inspected for lead in dust. Samples were taken from floors, window sills, and window wells in several locations throughout the home. Appendix III - Lead in Dust contains the result of the dust sampling conducted in FY63 Housing.

One of the sixty-four dust samples was found to contain lead in dust above the corresponding action level. Appendix II contains the Action Levels. The positive dust sample was located in 2354-B Moses Street and therefore is considered an isolated case within the community. The presence of lead in dust above the action limit is a potential hazard to the occupants of the home.

LEAD IN SOIL

A total of eight randomly selected units were inspected for lead in soil. Samples were collected from vehicle pathways, pedestrian pathways, foundation areas, and play areas. Background samples were also collected to identify the natural background occurrence of lead at the sampling site. Appendix V - Lead in Soil contains the results of the soil sampling conducted in FY63 Housing.

The samples analyzed did not have lead levels that exceeded the action limit. A hazard associated with lead in soil does not exist in this community at this time. The presence of exterior lead-based paint, however, creates the potential for elevated lead in soil levels if not properly maintained.

RECOMMENDATIONS

The fundamental step in the implementation of any plan to reduce lead hazards is a public relations package. The public relations package provides general information regarding the lead hazard minimization plan, an approach to implement the plan, and resident education guidance. Lead hazard minimization will include paint surface restoration, HEPA vacuuming/tri-sodium phosphate (TSP) cleaning of horizontal surfaces for lead in dust contamination, and mulching to provide groundcover for elevated lead in soil conditions. Initial public awareness meetings with the residents and workers are of utmost importance. The Marine Corps Base Kaneohe Document Package contains information on this subject.

LEAD IN PAINT

Lead-based paint was identified within the community. At the time of assessment about some of the LBP surfaces were found to have LBP existing in a damaged condition. These areas are considered short-term response items and are to be restored or removed (which ever is more cost effective) during the short-term period. In addition, all identified LBP components are to be visually re-assessed for damage. Include newly identified damaged components with previously identified damaged components listed in the short-term section of Table 2.

Develop an Operations and Maintenance (O&M) Program for all LBP components. Refer to HUD Guidelines for specific measures to take when establishing an O&M Program. Periodic O&M assessment and maintenance will minimize the hazard potential from LBP components over the long run versus performing abatement. Educate and disclose to residents the location and presence of the LBP. Inform residents to contact the O&M Manager upon any change in condition to LBP components. This type of reporting is to supplement O&M assessment not replace it.

The objective is to reduce human exposure or likely exposure to LBP hazards through proper paint film stabilization techniques. HUD specifically outlines how to successfully stabilize paint film. The steps from the Guidelines are listed below.

- *Eliminate any exterior leaks in the building envelope (e.g., roofing leaks, gutter or downspout problems, missing or damaged doors, roof flashing, missing opening trim, missing glass in windows, defective or missing caulk and glazing, loose fasteners).*
- *Eliminate any interior water leaks (e.g., plumbing leaks; clogged condense drip lines for air conditioners; missing water pans for hot water heaters; inadequately ventilated attic spaces; clogged bathtub drains; missing tile, grout, or caulking in bathtub drains; windows that won't close completely.*
- *Select and implement an appropriate Worksite Preparation Level.*

- *For exterior work, collect soil samples before the work begins (unless soil sampling has already been completed for a risk assessment). These samples need not be analyzed unless clearance samples show soil lead are above applicable clearance standards.*
- *Repair all rotted structural, siding, or railing components; defective plaster; missing door hardware; loose siding or trim; and loose wallpaper.*
- *Prepare surface by wet scraping or wet sanding. Do not remove paint by burning or torching, power sanding without HEPA attachments, or abrasive blasting. Dry scraping and chemical strippers with methylene chloride are not recommended.*
- *Clean, degloss, neutralize, and rinse surfaces. Surfaces should be dry before priming or repainting.*
- *Select primer and topcoat by considering longevity, moisture resistance, and organic compound content with low volatility. Paint film stabilization involves the application of at least two coats (the primer and the topcoat). Use a primer/topcoat system from the same manufacturer to ensure compatibility.*
- *Apply all paints at appropriate thickness or according to manufacturer's directions. Apply paint only during proper temperature, wind, and humidity conditions. Allow sufficient time for each coat to dry fully.*
- *Conduct final cleanup according to Chapter 14 of HUD Guidelines.*
- *At the end of the lead hazard control project, have a certified inspector technician or risk assessor conduct a clearance examination and provide appropriate documentation or statements of lead-based paint compliance.*
- *Conduct reevaluations annually as indicated in the site-specific schedule (Table 6.1 of HUD Guidelines). Perform ongoing maintenance of paint and restabilize paint whenever deterioration is discovered.*

The process provided above was taken directly from HUD Guidelines, Chapter 11 - Interim Controls. This information is provided for the reader who may not have immediate access to a copy of the HUD Guidelines. Refer to the HUD Guidelines prior to executing any paint film stabilization.

LEAD IN DUST

A community wide lead in dust hazard does not exist at this time, however, lead in dust above EPA levels are present in 2354-B Moses Street. Clean all interior horizontal surfaces within the unit. Complete this cleaning using a certified HEPA vacuum followed by cleaning with TSP or a high-phosphate detergent. Notify community occupants of this particular elevated lead in dust situation. Include in the resident notification the proper "self-help" cleaning procedures and general information regarding lead in dust hazards.

The following is the HUD guidance for removal of leaded dust (Chapter 11). For additional information, an O&M Document with step-by-step procedures is available from the National Institute of Building Sciences (NIBS).

- *Correct any known or suspected lead-based paint hazards before dust removal.*
- *Visually inspect other dust traps, such as radiators and floor grates. If visible dust is found, the component should be cleaned.*
- *Distribute educational materials prepared by EPA or State or Local Government agencies to residents. These materials should warn residents that carpets, drapes, and upholstered furniture may be contaminated and should be cleaned or replaced.*
- *Prepare the work area with Interior Worksite Preparation Level 1 or other proven containment method (Chapter 8 of HUD Guidelines). If contaminated carpet is to be removed, the work area should be contained with Interior Worksite Preparation Level 3 or 4 (do not put down plastic sheeting on floors for carpet removal).*
- *Clean all horizontal surfaces, beginning with HEPA vacuuming, followed by wet washing with a cleaning agent suitable for lead removal, such as a lead-specific cleaner or tri-sodium phosphate detergent. Test the cleaning solution before using to determine if it will discolor or damage surfaces to be cleaned.*
- *Begin dust removal at the top rear room in the dwelling, working forward and down. Within rooms, start with the highest horizontal surface and work down. Clean windows, other dust traps, and finally the floors. When practical, clean dirty areas last within room to avoid spreading dust.*
- *Place the HEPA vacuum on a smooth, hard surface or on a sheet of plastic during operation. Remove HEPA filters and bags off-site (not inside dwelling) in a controlled environment. Vacuum and bags should be made by the same manufacturer.*
- *During wet cleaning, replace rags, sponges, and mops frequently (at least once per dwelling). use a two-bucket system for floors: one for the cleaning solution and the other for rinsing. Change the wash water at least once in each room.*
- *Clean until no surface dust is visible. After cleaning rinse with clean water and a new sponge or cloth.*

- *To clean area rugs, HEPA vacuum the top side with a beater bar or agitator attachment at a rate of 1 minute for each 10 square-foot area. Fold the rug in half and HEPA vacuum the backing of half the carpet without using the beater bar at a rate of 1 minute per 10 square feet. HEPA vacuum the exposed floor beneath the carpet, the bottom of the carpet, and the pad (if there is one), and fold the rug back into its original position. Repeat the process for the other half of the rug. Finally, HEPA vacuum the top side again with the beater bar at a rate of at least 2 minutes per 10 square feet.*
- *For wall-to-wall carpeting that cannot be folded over, HEPA vacuum at a rate no faster than 2 minutes per 10 square feet in a side-to-side direction, followed by another pass at the same rate in a direction perpendicular to the direction of the first vacuuming, for a 4 minutes per 19 square feet. For wall-to-wall carpeting, it is not feasible to clean the floor underneath the carpeting.*
- *Conduct clearance dust wipe sampling on rugs or furnishings that were cleaned to determine if the cleaning was effective.*
- *To clean other upholstered furnishings, HEPA vacuum each surface three to five times.*
- *Clean drop ceilings or the ductwork for forced air systems only when they are expected to be disturbed. HEPA vacuum and wet clean air vents or registers. Replace air filters in the forced air systems at the time of cleaning. have a certified inspector technician or risk assessor conduct a clearance examination. Repeat cleaning if necessary. Conduct periodic reevaluations.*

The process provided above was taken directly from HUD Guidelines, Chapter 11 - Interim Controls. This information is provided for the reader who may not have immediate access to a copy of the HUD Guidelines. Refer to the HUD Guidelines prior to executing any lead in dust clean-up.

LEAD IN SOIL

A lead in soil hazard is not present in FY63 Housing at this time; therefore, no short-term action is required. The presence of exterior lead-based paint, however, creates the potential for elevated lead in soil levels if not properly maintained.

HAZARD MINIMIZATION

A summary of the analysis for LBP components, lead in dust and lead in soil contamination is present in Table 2. Prioritization of these potential hazards is from highest hazard rated first, descending to the least hazardous. Included is the recommended action required and its associated time-frame for implementation.

Short-term

Damaged lead-based paint was found during the assessment of the community which poses a moderate to high potential hazard to the occupants and maintenance workers. Restore these damaged surfaces during the short-term time-frame (see Table 2 for a prioritized listing). In addition, visually re-assess all LBP surfaces community-wide to define current conditions. Add any of the LBP surfaces to the short-term restoration list that were previously assessed as intact but are now damaged. Refer to the recommendations in the Lead in Paint section for specific guidance on corrective actions (paint restoration).

Lead in dust above allowable levels is present in 2354-B Moses Street. Take action to minimize the potential hazard from the lead in dust during the short-term time-frame. Refer to the Lead in Dust section for specific guidance on corrective actions.

Interim Control

Use interim controls to successfully minimize risks associated with the identified potential lead hazards within the community. Listed below are several fundamental interim control measures. Refer to HUD Guidelines Chapter 11 for a detailed explanation and further guidance.

- Repair all rotten or defective substrates that could lead to rapid paint deterioration.
- Paint film stabilization.
- Friction and impact surface treatments.
- Treat friction and impact surfaces such as windows, doors, stair treads, and floors when they are generating LBP chips or excessive levels of leaded dust that cannot be controlled with ordinary cleaning.
- Treat protruding, accessible surfaces such as interior window sills where LBP may be present and there is either visual or reported evidence that children are mouthing or chewing them.
- Treat all bare soil containing excessive levels of lead.

- Dust removal and control - clean surfaces to reduce levels of leaded dust to acceptable levels, including cleaning carpets, if they are contaminated.
- Educate residents and maintenance workers on how to avoid lead poisoning.
- Conduct reevaluations by certified individuals and ongoing monitoring by residents

Renovation

During upcoming renovation projects, incorporate the recommended abatement action response for all LBP components present in the proposed renovation area. Refer to the ranking scheme provided for the recommended abatement action response and priority for each LBP component. The Occupational Safety and Health Administration (OSHA) regulates the occupational exposure to inorganic lead. OSHA standards define the airborne lead exposure limits for workers.

Depending upon the scope of the particular renovation project, the overall cost of the project may be reduced by performing additional testing prior to commencing the renovation. The supplemental testing will allow exact specification of individual LBP components per unit that require abatement.

Demolition

During a demolition phase, OSHA standards regulate the occupational lead exposure and define the airborne lead exposure limits for workers. The Resource Conservation and Recovery Act (RCRA) is the basic Federal law governing waste disposal. RCRA distinguishes between solid waste and hazardous waste.

In determining whether a waste is hazardous or non-hazardous, contact the Environmental Compliance Office or housing for the latest Federal, State and landfill requirements.

Prioritization, Action Response, and Time-Frame

The table below represents the established prioritization by hazard and provides the appropriate action to take, and the time-frame to complete that action. The table is divided into four sections: Short-term, Interim Control, Renovation, and Demolition.

Table 2 - Prioritization, Action Response, and Time-Frame					
Priority ¹	Location ²	Room # ²	Component	Action Response	Comments
SHORT-TERM					
• Develop and implement an Operations and Maintenance Program.					
Lead in Dust					
-	2354-B MOSES ST	All	All Interior Horizontal Surfaces	TSP Cleaning and HEPA Vacuuming	Paint restoration and O&M to follow-up
Lead in Paint					
1	Bathroom	2	Cabinet	Paint Restoration	Perform O&M until abated.
1	Bedroom	1	Baseboard	Paint Restoration	Perform O&M until abated.
1	Bedroom	2	Baseboard	Paint Restoration	Perform O&M until abated.
1	Exterior	1	Facia	Paint Restoration	Perform O&M until abated.
1	Kitchen	1	Door Exterior	Paint Restoration	Perform O&M until abated.
1	Living	1	Door Exterior	Paint Restoration	Perform O&M until abated.
3	Exterior	1	Door	Paint Restoration	Perform O&M until abated.
3	Exterior	1	Entry Overhang	Paint Restoration	Perform O&M until abated.
3	Exterior	1	Window Frame	Paint Restoration	Perform O&M until abated.
4	Exterior	1	Soffit	Paint Restoration	Perform O&M until abated.
INTERIM CONTROL					
• Thoroughly inspect and assess all lead-based paint components. Update records and perform					

Table 2 - Prioritization, Action Response, and Time-Frame

Priority ¹	Location ²	Room # ²	Component	Action Response	Comments
any required maintenance and repairs. Perform dust and soil sampling to monitor lead contamination changes. Perform annually or as appropriate during maintenance/service calls.					
RENOVATION					
5	Bathroom	1	Cabinet	Replacement	Perform O&M until abated.
5	Bathroom	1	Door	Replacement	Perform O&M until abated.
5	Bathroom	1	Door Frame	Replacement	Perform O&M until abated.
5	Bathroom	1	Wall	Enclosure	Perform O&M until abated.
5	Bathroom	1	Window Frame	Replacement	Perform O&M until abated.
5	Bathroom	2	Baseboard	Replacement	Perform O&M until abated.
5	Bathroom	2	Cabinet	Replacement	Perform O&M until abated.
5	Bathroom	2	Door	Replacement	Perform O&M until abated.
5	Bathroom	2	Door Frame	Replacement	Perform O&M until abated.
5	Bathroom	2	Wall	Enclosure	Perform O&M until abated.
5	Bathroom	2	Window Frame	Replacement	Perform O&M until abated.
5	Bedroom	1	Baseboard	Replacement	Perform O&M until abated.
5	Bedroom	1	Door Frame	Replacement	Perform O&M until abated.
5	Bedroom	2	Baseboard	Replacement	Perform O&M until abated.
5	Bedroom	2	Cabinet	Replacement	Perform O&M until abated.
5	Bedroom	2	Door Frame	Replacement	Perform O&M until abated.
5	Bedroom	3	Baseboard	Replacement	Perform O&M until abated.
5	Bedroom	3	Door Frame	Replacement	Perform O&M until abated.
5	Bedroom	4	Door	Replacement	Perform O&M until abated.
5	Bedroom	4	Door Frame	Replacement	Perform O&M until abated.
5	Exterior	1	Facia	Replacement	Perform O&M until abated.
5	Hallway	1	Baseboard	Replacement	Perform O&M until abated.
5	Hallway	1	Door	Replacement	Perform O&M until abated.

Table 2 - Prioritization, Action Response, and Time-Frame

Priority ¹	Location ²	Room # ²	Component	Action Response	Comments
5	Hallway	1	Door Frame	Replacement	Perform O&M until abated.
5	Kitchen	1	Door Frame	Replacement	Perform O&M until abated.
5	Kitchen	1	Wall	Enclosure	Perform O&M until abated.
5	Living	1	Baseboard	Replacement	Perform O&M until abated.
5	Living	1	Door	Replacement	Perform O&M until abated.
5	Living	1	Door Frame	Replacement	Perform O&M until abated.
6	Bathroom	1	Closet Shelf	Replacement	Perform O&M until abated.
6	Bedroom	1	Ceiling	Encapsulation	Perform O&M until abated.
6	Exterior	1	Ceiling	Encapsulation	Perform O&M until abated.
7	Exterior	1	Door - Exterior	Replacement	Perform O&M until abated.
7	Exterior	1	Door Frame	Replacement	Perform O&M until abated.
7	Exterior	1	Entry Overhang	Paint Removal	Perform O&M until abated.
7	Exterior	1	Window Frame	Replacement	Perform O&M until abated.
8	Exterior	1	Soffit	Paint Removal	Perform O&M until abated.
-	Bathroom	1	Tile	Enclosure	Perform O&M until abated.
-	Bathroom	2	Tile	Enclosure	Perform O&M until abated.

DEMOLITION

- Perform TCLP testing of demolition wastestream. Maintain Personal Protective Equipment (PPE) as required during demolition activities. Adhere to local/state guidelines for waste disposal requirements.

Table 2 - Prioritization, Action Response, and Time-Frame

Priority ¹	Location ²	Room # ²	Component	Action Response	Comments
¹ Priority ranks those components with the highest hazard potential first down to the least hazardous potential.					
² See Floor Plans - Appendix I.					

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REFERENCE FORM 19

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *Lead Management Plan, Capehart, Marine Corps Base Kaneohe, Kaneohe, HI.* Prepared by Department of the Navy, Navy PWC, Energy and Environmental Engineering Branch, Norfolk, VA. April 1997.

Pages Viewed: Section A through D (See attached sections)

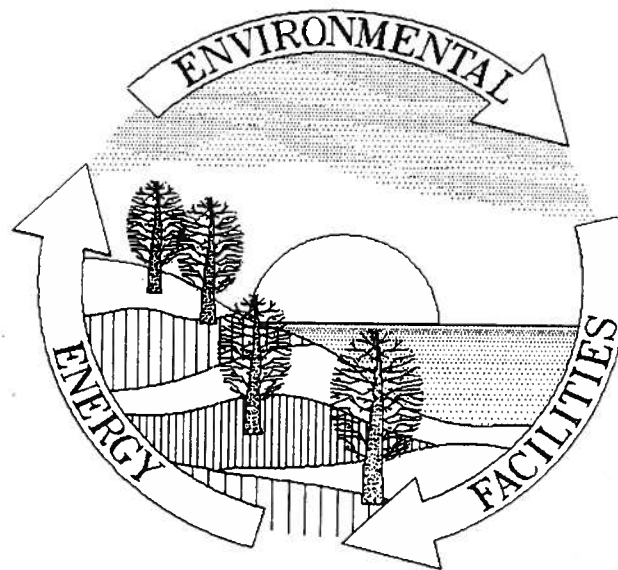
Date Viewed: April 2007

Results: Information incorporated into the ECP.

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LEAD MANAGEMENT PLAN

**CAPEHART
MCB KANEOHE
KANEOHE, HI**



SPONSORED BY:

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APRIL 1997

NOTE: This document is intended to be a working management plan for Capehart housing. Refer to the Lead Activity Summary provided for all pertinent program information.

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A special thanks to the housing staff at MCB Kaneohe who assisted PWC - Norfolk, Virginia in completing their project efficiently.

COMMUNITY DESCRIPTION

A summary of the Capehart inspection is below in Table 1. Provided in Appendix I is a listing of the housing units inspected.

- Community Number: 0404 ¹
- Activity UIC Number: M00318 ¹
- Inspection Dates: August - November 1996

Table 1 - Inspection Parameters

Housing Type	Square Footage	Total # of Units	# of Units Inspected			Floor Plan Type ²	Year(s) of Construction
			Paint	Dust	Soil		
Duplexes							
2 Bedrooms	1020	645	2	0	0	1	1959
2 Bedrooms	1188		3	2	2	2	1959
2 Bedrooms	1188		1	1	1	3	1959
2 Bedrooms	1188		0	0	0	4	1959
2 Bedrooms	1020		2	3	3	5	1959
2 Bedrooms	1188		3	1	1	6	1959
2 Bedrooms	1188		9	4	4	7	1959
2 Bedrooms	1188		2	0	0	8	1959
2 Bedrooms	1188		10	2	2	9	1959
2 Bedrooms	1188		4	2	2	10	1959
2 Bedrooms	1188		4	2	2	11	1959
2 Bedrooms	1254		0	0	0	12	1959
2 Bedrooms	1374		3	2	2	13	1959
2 Bedrooms	1370		4	2	2	14	1959
2 Bedrooms	1372		3	0	0	15	1959
2 Bedrooms	1278		1	0	0	16	1959
2 Bedrooms	1375		5	2	2	17	1959
2 Bedrooms	1332		0	0	0	18	1959
2 Bedrooms	1509		0	0	0	19	1959
Totals	801090	645	56	23	23		

¹ See Definitions - Appendix II.

² See Floor Plans - Appendix I.

FINDINGS AND ANALYSIS

The primary objective of the lead assessment of the Capehart community is to determine if a potential lead-based paint (LBP) hazard exists in the community and recommend methods to minimize all potential hazards. The Department of Housing and Urban Development (HUD) Guidelines outline the general scheme applied for the assessment testing protocol.

HUD surveys indicate that lead in dust is the major route for lead exposure for children. Lead in dust is primarily the result of deteriorating LBP. Soil contaminated with lead from weathering, chalking, and deterioration of exterior LBP can contribute to the dwelling's interior lead in dust levels by being tracked into living areas. HUD surveys confirm a relationship between the presence of LBP with lead in dust and lead in soil. The surveys also list other potential sources of lead. The scope of this assessment is LBP and its associated hazards; however, the MCB Kaneohe Lead Activity Summary document does contain a discussion of the other potential sources for lead. For this LBP assessment, the analysis of LBP, lead in dust, and lead in soil in residential environments determine the overall lead hazard potential to the residents and workers of the Capehart community.

A component within a room is determined to be positive for LBP community-wide if at least ten percent of those tested are found to be positive. If the testing results for that same component show there were none identified to be positive then that component is negative community-wide. Lastly, if the testing results for that component show one to nine percent were identified as containing LBP, further analysis is required to make a community-wide determination. This analysis encompasses statistical comparison of that component with the same and similar components at different levels. The first level of analysis compares the component to similar components in the same room. The second level of analysis compares the component to the same component in all other rooms. The third and last level compares the component to similar components in all other rooms. All representative interior and exterior components were analyzed to determine the presence of LBP.

LEAD IN SOIL

A total of 23 randomly selected units were inspected for the presence of lead in soil. Samples were collected from foundation areas and roadsides. Background samples were also collected to identify the natural background occurrence of lead at the sampling site. Appendix V - Lead in Soil contains the results of the soil sampling conducted in Capehart.

One of 69 samples collected was found to contain lead in dust above the 400 ppm action level. This is considered an isolated case and not representative of the entire community. This specified area requires a localized action to ensure the potential hazard is minimized.

NOTE: Glazed ceramic components (tile) analyzed as part of the lead in paint survey do not represent the same potential hazard to human health as lead-based paint surfaces. The lead contained in the glaze is primarily a concern during maintenance, renovation, or demolition actions that may crush or pulverize the ceramic. For actions involving glazed ceramic identified to contain lead, implement procedures to manage and control any potential exposure.

Vinyl components (siding, soffit, fascia, etc.) determined to be positive as part of the lead in paint inspection may actually cover the LBP surfaces. In such cases, maintain these vinyl coverings as enclosures for the LBP surfaces until a renovation or demolition activity.

LEAD IN PAINT

Lead-based paint was identified on several surfaces within the community. Some of these LBP components were identified with paint surface damage at the time of this assessment.

The lead-based paint found within the community represents several levels of hazard potential. The assigned prioritization levels located in the left-most column of Table 2, are defined in Appendix II. Prioritization levels 1 through 4 are shown in the short-term action response portion of Table 2. These four levels represent damaged lead-based painted surfaces. The potential hazard level associated with the presence of this damaged lead-based paint is moderate to high as defined in Appendix II. Prioritization levels 5 through 8 represent lead-based paint that is intact. These levels are shown in the Renovation section of Table 2. These levels represent a low hazard to the occupant. Appendix III (Table P - Lead in Paint Inspection Summary) provides a composite summary of the inspection results.

LEAD IN DUST

A total of 23 randomly selected units were inspected for lead in dust. Samples were collected from floors, window sills, and window wells in several locations throughout the units. Appendix II - Lead in Dust contains the results of the dust sampling conducted in Capehart.

Nine of 184 dust samples collected were found to contain lead in dust above the corresponding action level. Appendix II contains the Action Levels. Consider the presence of leaded dust above the action limits a potential hazard to the occupants of the home.

RECOMMENDATIONS

The fundamental step in the implementation of any plan to reduce lead hazards is a public relations package. The public relations package provides general information regarding the lead hazard minimization plan, an approach to implement the plan, and resident education guidance. Lead hazard minimization will include paint surface restoration, HEPA vacuuming/tri-sodium phosphate (TSP) cleaning of horizontal surfaces for lead in dust contamination, and mulching to provide groundcover for elevated lead in soil conditions. Initial public awareness meetings with the residents and workers are of utmost importance. The MCB Kaneohe Document Package contains information on this subject.

LEAD IN PAINT

Lead-based paint was identified on several components within the community. At the time of assessment some of the surfaces were found to have LBP existing in a damaged condition. These areas are considered short-term response items and are to be restored or removed (which ever is more cost effective) during the short-term period. In addition, all identified LBP components are to be visually re-assessed for damage. Include newly identified damaged components with previously identified damaged components listed in the short-term section of Table 2.

Develop an Operations and Maintenance (O&M) Program for all LBP components. Refer to HUD Guidelines for specific measures to take when establishing an O&M Program. Periodic O&M assessment and maintenance will minimize the hazard potential from LBP components over the long run versus performing abatement. Educate and disclose to residents the location and presence of the LBP. Inform residents to contact the O&M Manager upon any change in condition to LBP components. This type of reporting is to supplement O&M assessment not replace it.

The objective is to reduce human exposure or likely exposure to LBP hazards through proper paint film stabilization techniques. HUD specifically outlines how to successfully stabilize paint film. The steps from the Guidelines are listed below.

- *Eliminate any exterior leaks in the building envelope (e.g., roofing leaks, gutter or downspout problems, missing or damaged doors, roof flashing, missing opening trim, missing glass in windows, defective or missing caulk and glazing, loose fasteners).*

- Eliminate any interior water leaks (e.g., plumbing leaks; clogged condense drip lines for air conditioners; missing water pans for hot water heaters; inadequately ventilated attic spaces; clogged bathtub drains; missing tile, grout, or caulking in bathtub drains; windows that won't close completely.
- Select and implement an appropriate Worksite Preparation Level.
- For exterior work, collect soil samples before the work begins (unless soil sampling has already been completed for a risk assessment). These samples need not be analyzed unless clearance samples show soil lead are above applicable clearance standards.
- Repair all rotted structural, siding, or railing components; defective plaster; missing door hardware; loose siding or trim; and loose wallpaper.
- Prepare surface by wet scraping or wet sanding. Do not remove paint by burning or torching, power sanding without HEPA attachments, or abrasive blasting. Dry scraping and chemical strippers with methylene chloride are not recommended.
- Clean, degloss, neutralize, and rinse surfaces. Surfaces should be dry before priming or repainting.
- Select primer and topcoat by considering longevity, moisture resistance, and organic compound content with low volatility. Paint film stabilization involves the application of at least two coats (the primer and the topcoat). Use a primer/topcoat system from the same manufacturer to ensure compatibility.
- Apply all paints at appropriate thickness or according to manufacturer's directions. Apply paint only during proper temperature, wind, and humidity conditions. Allow sufficient time for each coat to dry fully.
- Conduct final cleanup according to Chapter 14 of HUD Guidelines.
- At the end of the lead hazard control project, have a certified inspector technician or risk assessor conduct a clearance examination and provide appropriate documentation or statements of lead-based paint compliance.
- Conduct reevaluations annually as indicated in the site-specific schedule (Table 6.1 of HUD Guidelines). Perform ongoing maintenance of paint and restabilize paint whenever deterioration is discovered.

The process provided above was taken directly from HUD Guidelines, Chapter 11 - Interim Controls. This information is provided for the reader who may not have immediate access to a copy of the HUD Guidelines. Refer to the HUD Guidelines prior to executing any paint film stabilization.

LEAD IN DUST

Elevated lead in dust was found in multiple units throughout the community. Lead in dust poses a potential hazard to the residents of the community. As defined and outlined by HUD Guidelines, clean all interior horizontal surfaces in the community. The following is the HUD guidance for removal of leaded dust (Chapter 11). For additional information, an O&M Document with step-by-step procedures is available from the National Institute of Building Sciences (NIBS).

- Correct any known or suspected lead-based paint hazards before dust removal.
- Visually inspect other dust traps, such as radiators and floor grates. If visible dust is found, the component should be cleaned.
- Distribute educational materials prepared by EPA or State or Local Government agencies to residents. These materials should warn residents that carpets, drapes, and upholstered furniture may be contaminated and should be cleaned or replaced.
- Prepare the work area with Interior Worksite Preparation Level 1 or other proven containment method (Chapter 8 of HUD Guidelines). If contaminated carpet is to be removed, the work area should be contained with Interior Worksite Preparation Level 3 or 4 (do not put down plastic sheeting on floors for carpet removal).
- Clean all horizontal surfaces, beginning with HEPA vacuuming, followed by wet washing with a cleaning agent suitable for lead removal, such as a lead-specific cleaner or tri-sodium phosphate detergent. Test the cleaning solution before using to determine if it will discolor or damage surfaces to be cleaned.
- Begin dust removal at the top rear room in the dwelling, working forward and down. Within rooms, start with the highest horizontal surface and work down. Clean windows, other dust traps, and finally the floors. When practical, clean dirty areas last within room to avoid spreading dust.
- Place the HEPA vacuum on a smooth, hard surface or on a sheet of plastic during operation. Remove HEPA filters and bags off-site (not inside dwelling) in a controlled environment. Vacuum and bags should be made by the same manufacturer.
- During wet cleaning, replace rags, sponges, and mops frequently (at least once per dwelling). Use a two-bucket system for floors: one for the cleaning solution and the other for rinsing. Change the wash water at least once in each room.
- Clean until no surface dust is visible. After cleaning rinse with clean water and a new sponge or cloth.
- To clean area rugs, HEPA vacuum the top side with a beater bar or agitator attachment at a rate of 1 minute for each 10 square-foot area. Fold the rug in half and HEPA vacuum the backing of half the carpet without using the beater bar

at a rate of 1 minute per 10 square feet. HEPA vacuum the exposed floor beneath the carpet, the bottom of the carpet, and the pad (if there is one), and fold the rug back into its original position. Repeat the process for the other half of the rug. Finally, HEPA vacuum the top side again with the beater bar at a rate of at least 2 minutes per 10 square feet.

- For wall-to-wall carpeting that cannot be folded over, HEPA vacuum at a rate no faster than 2 minutes per 10 square feet in a side-to-side direction, followed by another pass at the same rate in a direction perpendicular to the direction of the first vacuuming, for a 4 minutes per 19 square feet. For wall-to-wall carpeting, it is not feasible to clean the floor underneath the carpeting.
- Conduct clearance dust wipe sampling on rugs or furnishings that were cleaned to determine if the cleaning was effective.
- To clean other upholstered furnishings, HEPA vacuum each surface three to five times.
- Clean drop ceilings or the ductwork for forced air systems only when they are expected to be disturbed. HEPA vacuum and wet clean air vents or registers. Replace air filters in the forced air systems at the time of cleaning. Have a certified inspector technician or risk assessor conduct a clearance examination. Repeat cleaning if necessary. Conduct periodic reevaluations.

The process provided above was taken directly from HUD Guidelines, Chapter 11 - Interim Controls. This information is provided for the reader who may not have immediate access to a copy of the HUD Guidelines. Refer to the HUD Guidelines prior to executing any lead in dust clean-up.

LEAD IN SOIL

A community-wide lead in soil hazard does not exist at this time, however, lead in soil above EPA levels are present at 2009-b Fleming Circle. Place mulch and/or groundcover over the elevated lead in soil sub-area(s) for this one particular unit to minimize the hazard. Notify community occupants of this particular elevated lead in soil situation. Include general information regarding lead hazards in the resident notification. Implement the interim controls outlined by the HUD Guidelines. These guidelines are provided below. For additional information, an O&M Document with step-by-step procedures is available from the National Institute of Building Sciences (NIBS).

- Use water to contain dust and clean equipment to prevent dispersion of lead
- Select an appropriate soil interim control, which may include impermanent surface coverings or land use controls.

- Impermanent surface coverings, including grass (as seed or sod), or other ground covers (e.g., ivy), artificial turf, bark, mulch, and gravel may not be permanent. If the area to be controlled is heavily traveled, surface coverings such as grass are not appropriate.
- If grass is selected, consult with the local agriculture extension service or a reputable local nursery to determine what grasses are appropriate for the locale, soil type, and sun/shade characteristics. Properly prepare the soil prior to seeding or sodding.
- If bark or gravel is selected, apply the covering a least 6 to 12 inches deep. New bark, gravel, or other materials should not contain more than 200 ug/g of lead. These materials should be tested before use unless previous testing data are available.
- If the soil is in a public recreation area, comply with Consumer Product Safety Commission standards on acceptable surface coverings in play areas.
- Land use controls include fencing, warning signs, creation of alternative play areas such as decking), and thorny bushes.
- Install surface coverings and/or land use controls. For live ground covers (including grass), it is imperative that they are properly watered during the first 3 months and adequately maintained thereafter. Automatic sprinkler systems are appropriate for large areas.
- Control water erosion by proper grading and installation of drainage channels.
- Control wind erosion by periodic watering, windbreaks, or foot-traffic controls.
- Provide walk-off doormats at all entryways to reduce the tracking of contaminated dust and soil into the dwelling.
- Have a certified risk assessor or inspector technician conduct a clearance examination and provide the necessary documentation.
- Perform ongoing maintenance and monitoring of soil coverings and land use controls. Reevaluations of the surfaces should be conducted by a certified risk assessor or inspector technician based on the specific reevaluation schedule for the property.
- If ongoing monitoring or reevaluations show that bare soil remains or reappears, interim controls are not effective. Soil abatement should be conducted, unless other interim controls can be shown to be feasible for the specific site.

The process provided above was taken directly from HUD Guidelines, Chapter 11 - Interim Controls. This information is provided for the reader who may not have immediate access to a copy of the HUD

Guidelines. Refer to the HUD Guidelines prior to executing any lead in soil actions.

HAZARD MINIMIZATION

A summary of the analysis for lead-based paint components, lead in dust and lead in soil contamination is present in Table 2. Prioritization of these potential hazards is from highest hazard rated first, descending to the least hazardous. Included is the recommended action required and its associated time-frame for implementation.

Short-term

Damaged lead-based paint was found during the assessment of the community which poses a moderate to high potential hazard to the occupants and maintenance workers. Restore these damaged surfaces during the short-term time-frame (see Table 2 for a prioritized listing). In addition, visually re-assess all LBP surfaces community-wide to define current conditions. Add any of the LBP surfaces to the short-term restoration list that were previously assessed as intact but are now damaged. Refer to the recommendations in the Lead in Paint section for specific guidance on corrective actions (paint restoration).

Lead in dust above allowable levels is present in the community. Take action to minimize the potential hazard from the lead in dust during the short-term time-frame. Refer to the Lead in Dust section for specific guidance on corrective actions.

Lead in soil above the allowable level is present in a single housing unit. Take action to minimize the potential hazard from the lead in soil during the short-term time-frame. Refer to the Lead in Soil section for specific guidance on corrective actions.

Interim Control

Use interim controls to successfully minimize risks associated with the identified potential lead hazards within the community. Listed below are several fundamental interim control measures. Refer to HUD Guidelines Chapter 11 for a detailed explanation and further guidance.

- Repair all rotten or defective substrates that could lead to rapid paint deterioration.
- Paint film stabilization.
- Friction and impact surface treatments.
- Treat friction and impact surfaces such as windows, doors, stair treads, and floors when they are generating LBP chips or excessive levels of leaded dust that cannot be controlled with ordinary cleaning.
- Treat protruding, accessible surfaces such as interior window sills where LBP may be present and there is either visual or reported evidence that children are mouthing or chewing them.
- Treat all bare soil containing excessive levels of lead.
- Dust removal and control - clean surfaces to reduce levels of leaded dust to acceptable levels, including cleaning carpets, if they are contaminated.
- Educate residents and maintenance workers on how to avoid lead poisoning.
- Conduct reevaluations by certified individuals and ongoing monitoring by residents

Renovation

During upcoming renovation projects, incorporate the recommended abatement action response for all LBP components present in the proposed renovation area. Refer to the ranking scheme provided for the recommended abatement action response and priority for each LBP component. The Occupational Safety and Health Administration (OSHA)

regulates the occupational exposure to inorganic lead. OSHA standards define the airborne lead exposure limits for workers.

Depending upon the scope of the particular renovation project, the overall cost of the project may be reduced by performing additional testing prior to commencing the renovation. The supplemental testing will allow exact specification of individual LBP components per unit that require abatement.

Demolition

During a demolition phase, OSHA standards regulate the occupational lead exposure and define the airborne lead exposure limits for workers. The Resource Conservation and Recovery Act (RCRA) is the basic Federal law governing waste disposal. RCRA distinguishes between solid waste and hazardous waste.

In determining whether a waste is hazardous or non-hazardous, contact the Environmental Compliance Office or housing for the latest Federal, State and landfill requirements.

Table 2 - Prioritization, Action Response, and Time-Frame

- Develop and implement an Operations and Maintenance Program.

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Table 2 - Prioritization, Action Response, and Time-Frame

Priority ¹	Location ²	Room # ²	Component	Action Response	Comments
1	Utility	1	Door - Exterior	Paint Restoration	Perform O&M until abated.
1	Utility	1	Door - Frame	Paint Restoration	Perform O&M until abated.
1	Utility	1	Wall	Paint Restoration	Perform O&M until abated.
2	Bathroom	2	Ceiling	Paint Restoration	Perform O&M until abated.
2	Storage	1	Shelf	Paint Restoration	Perform O&M until abated.
3	Carpport	1	Column	Paint Restoration	Perform O&M until abated.
3	Carpport	1	Door - Exterior	Paint Restoration	Perform O&M until abated.
3	Carpport	1	Wall	Paint Restoration	Perform O&M until abated.
3	Exterior	1	Door - Frame	Paint Restoration	Perform O&M until abated.
3	Exterior	1	Pipe	Paint Restoration	Perform O&M until abated.
3	Exterior	1	Window - Sash	Paint Restoration	Perform O&M until abated.
3	Storage	1	Door - Exterior	Paint Restoration	Perform O&M until abated.
3	Storage	1	Wall	Paint Restoration	Perform O&M until abated.
INTERIM CONTROL					
<ul style="list-style-type: none"> Thoroughly inspect and assess all lead-based paint components. Update records and perform any required maintenance and repairs. Perform dust and soil sampling to monitor lead contamination changes. Perform annually or as appropriate during maintenance/service calls. 					
RENOVATION					
5	Bathroom	1	Wall	Enclosure	Perform O&M until abated.
5	Bathroom	2	Window - Sash	Replacement	Perform O&M until abated.
5	Bedroom	1	Wall	Enclosure	Perform O&M until abated.
5	Bedroom	2	Wall	Enclosure	Perform O&M until abated.
5	Bedroom	2	Window - Sash	Replacement	Perform O&M until abated.
5	Bedroom	3	Wall	Enclosure	Perform O&M until abated.

Table 2 - Prioritization, Action Response, and Time-Frame

Priority ¹	Location ²	Room # ³	Component	Act on Response	Comments
5	Bedroom	4	Door - Frame	Replacement	Perform O&M until abated.
5	Bedroom	4	Wall	Enclosure	Perform O&M until abated.
5	Kitchen	1	Door - Exterior	Replacement	Perform O&M until abated.
5	Kitchen	1	Wall	Enclosure	Perform O&M until abated.
5	Living	1	Door - Exterior	Replacement	Perform O&M until abated.
5	Living	1	Wall	Enclosure	Perform O&M until abated.
5	Porch	1	Door - Exterior	Replacement	Perform O&M until abated.
5	Porch	1	Door - Frame	Replacement	Perform O&M until abated.
5	Porch	1	Wall	Enclosure	Perform O&M until abated.
5	Utility	1	Door - Exterior	Replacement	Perform O&M until abated.
5	Utility	1	Door - Frame	Replacement	Perform O&M until abated.
5	Utility	1	Wall	Enclosure	Perform O&M until abated.
6	Bathroom	1	Ceiling	Encapsulation	Perform O&M until abated.
6	Bathroom	2	Ceiling	Encapsulation	Perform O&M until abated.
6	Carpport	1	Ceiling	Encapsulation	Perform O&M until abated.
6	Storage	1	Shelf	Replacement	Perform O&M until abated.
7	Carpport	1	Column	Paint Removal	Perform O&M until abated.
7	Carpport	1	Door - Exterior	Replacement	Perform O&M until abated.
7	Carpport	1	Fence	Replacement	Perform O&M until abated.
7	Carpport	1	Wall	Enclosure	Perform O&M until abated.
7	Exterior	1	Column	Paint Removal	Perform O&M until abated.
7	Exterior	1	Door	Replacement	Perform O&M until abated.
7	Exterior	1	Door - Frame	Replacement	Perform O&M until abated.
7	Exterior	1	Fence	Replacement	Perform O&M until abated.
7	Exterior	1	Pipe	Paint Removal	Perform O&M until abated.

Table 2 - Prioritization, Action Response, and Time-Frame

Priority ¹	Location ²	Room # ²	Component	Action Response	Comments
7	Exterior	1	Siding	Enclosure	Perform O&M until abated.
7	Exterior	1	Wall	Enclosure	Perform O&M until abated.
7	Exterior	1	Window - Molding	Replacement	Perform O&M until abated.
7	Exterior	1	Window - Sash	Replacement	Perform O&M until abated.
7	Storage	1	Door - Exterior	Replacement	Perform O&M until abated.
7	Storage	1	Wall	Enclosure	Perform O&M until abated.
8	Carpport	1	Beam	Paint Removal	Perform O&M until abated.
8	Carpport	1	Facia - Vinyl	Replacement	Perform O&M until abated.
8	Carpport	1	Vent, HVAC	Replacement	Perform O&M until abated.
8	Exterior	1	Beam	Paint Removal	Perform O&M until abated.
8	Exterior	1	Facia - Vinyl	Replacement	Perform O&M until abated.
8	Exterior	1	Soffit - Vinyl	Paint Removal	Perform O&M until abated.

DEMOLITION

- Perform TCLP testing of demolition wastestream. Maintain Personal Protective Equipment (PPE) as required during demolition activities. Adhere to local/state guidelines for waste disposal requirements.

¹ Priority ranks those components with the highest hazard potential first down to the least hazardous potential.

² See Floor Plans - Appendix I.

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REFERENCE FORM 20

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *Lead Management Plan, Ulupau Housing, Marine Corps Base Kaneohe, Kaneohe, HI.* Prepared by Department of the Navy, Navy PWC, Energy and Environmental Engineering Branch, Norfolk, VA. April 1997.

Pages Viewed: Entire Document (See attached sections)

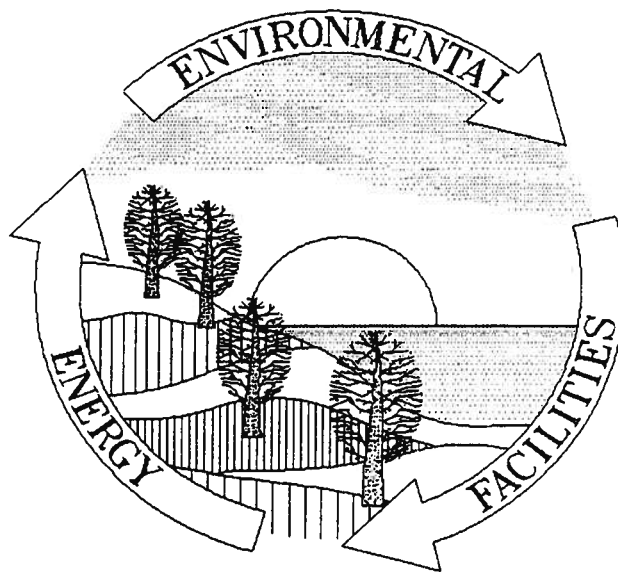
Date Viewed: April 2007

Results: Information incorporated into the ECP.

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LEAD MANAGEMENT PLAN

**ULUPAU HOUSING
MCB KANEOHE
KANEOHE, HI**



SPONSORED BY:

Department of the Navy
Commandant of the Marine Corps
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PREPARED BY:

Department of the Navy
Navy Public Works Center
Energy and Environmental Engineering Branch, Code 333
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

APRIL 1997

NOTE: This document is intended to be a working management plan for Ulupau Housing. Refer to the Lead Activity Summary provided for all pertinent program information.

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A special thanks to the housing staff at MCB Kaneohe who assisted PWC - Norfolk, Virginia in completing their project efficiently.

COMMUNITY DESCRIPTION

A summary of the Ulupau Housing inspection is below in Table 1. Provided in Appendix I is a listing of the housing units inspected.

- Community Number: 0409 ¹
- Activity UIC Number: M300318 ¹
- Inspection Dates: October - November 1996

Table 1 - Inspection Parameters

Housing Type	Square Footage	Total # of Units	# of Units Inspected			Floor Plan Type ²	Year(s) of Construction
			Paint	Dust	Soil		
Apartments							
2 Bedroom	920	350	20	2	1	409A	1976
4 Bedroom	1250		34	13	10	409B	1976
Totals	379750	350	54	15	11		

¹ See Definitions - Appendix II.

² See Floor Plans - Appendix I.

FINDINGS AND ANALYSIS

The primary objective of the lead assessment of the Ulupau Housing community is to determine if a potential lead-based paint (LBP) hazard exists in the community and recommend methods to minimize all potential hazards. The Department of Housing and Urban Development (HUD) Guidelines outline the general scheme applied for the assessment testing protocol.

HUD surveys indicate that lead in dust is the major route for lead exposure for children. Lead in dust is primarily the result of deteriorating LBP. Soil contaminated with lead from weathering, chalking, and deterioration of exterior LBP can contribute to the dwelling's interior lead in dust levels by being tracked into living areas. HUD surveys confirm a relationship between the presence of LBP with lead in dust and lead in soil. The surveys also list other potential sources of lead. The scope of this assessment is LBP and its associated hazards; however, the MCB Kaneohe Lead Activity Summary document does contain a discussion of the other potential sources for lead. For this LBP assessment, the analysis of LBP, lead in dust, and lead in soil in residential environments determine the overall lead hazard potential to the residents and workers of the Ulupau Housing community.

A component within a room is determined to be positive for LBP community-wide if at least ten percent of those tested are found to be positive. If the testing results for that same component show there were none identified to be positive then that component is negative community-wide. Lastly, if the testing results for that component show one to nine percent were identified as containing LBP, further analysis is required to make a community-wide determination. This analysis encompasses statistical comparison of that component with the same and similar components at different levels. The first level of analysis compares the component to similar components in the same room. The second level of analysis compares the component to the same component in all other rooms. The third and last level compares the component to similar components in all other rooms. All representative interior and exterior components were analyzed to determine the presence of LBP.

LEAD IN PAINT

No lead-based paint was found based upon this assessment. No action required.

Appendix III (Table P - Lead in Paint Inspection Summary) provides a composite summary of the inspection results.

LEAD IN DUST

A total of 15 randomly selected units were inspected for lead in dust. Samples were taken from floors, window sills, and window wells in several locations throughout the home. Results of sampling are located in Appendix IV - Lead in Dust.

The samples analyzed did not have levels that exceeded the corresponding action limit. A hazard associated with lead in dust does not exist in this community at this time. No action required.

LEAD IN SOIL

A total of 11 randomly selected units were inspected for lead in soil. Samples were collected from foundation areas, roadsides, and pathways. Background samples were also collected to identify the natural background occurrence of lead at the sampling site. Appendix V - Lead in Soil contains the results of the soil sampling conducted in Ulupau Housing.

The samples analyzed did not have lead levels that exceeded the action limit. A hazard associated with lead in soil does not exist in this community at this time. No action required.

REFERENCE FORM 21

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *Lead management Plan, Kaneohe Playgrounds, Marine Corps Base Kaneohe, Kaneohe, HI.* Prepared by Department of the Navy, Navy PWC, Energy and Environmental Engineering Branch, Norfolk, VA. November 1996

Pages Viewed: Entire Document (See attached sections)

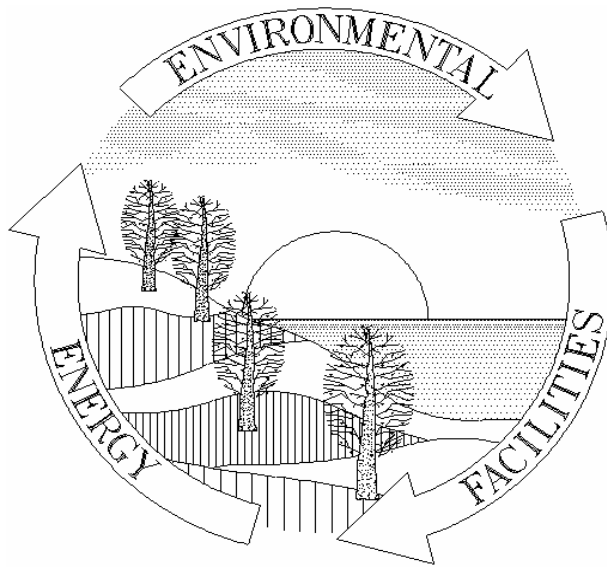
Date Viewed: April 2007

Results: Information incorporated into the ECP.

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LEAD MANAGEMENT PLAN

KANEOHE PLAYGROUNDS MCB KANEOHE KANEOHE, HI



SPONSORED BY:

Department of the Navy
Commandant of the Marine Corps
(LFF-3) Headquarters, US Marine Corps
2 Navy Annex, Washington, D.C. 20380-1775

PREPARED BY:

Department of the Navy
Navy Public Works Center
Energy and Environmental Engineering Branch, Code 333
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

NOVEMBER 1996

NOTE: This document is intended to be a working management plan for MCB Kaneohe Playgrounds. Refer to the Lead Activity Summary provided for all pertinent program information.

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A special thanks to the housing staff at MCB Kaneohe who assisted PWC - Norfolk, Virginia in completing their project efficiently.

PLAYGROUND DESCRIPTION

A summary of the MCB Kaneohe Playground inspection is below in Table 1. Provided in Appendix I is a listing of the playgrounds inspected.

- Community Number: 0500 ¹
- Activity UIC Number: M00318 ¹
- Inspection Dates: July 1996

Table 1 - Inspection Parameters

Type	Total # of Playgrounds	# Inspected For		Year(s) of Construction
		Paint	Soil	
Playgrounds	64	64	64	n/a
¹ See Definitions - Appendix II.				

FINDINGS AND ANALYSIS

The primary objective of the lead assessment of the Kaneohe Playgrounds is to determine if a potential lead-based paint (LBP) hazard exists in the community and recommend methods to minimize all potential hazards. The Department of Housing and Urban Development (HUD) Guidelines outline the general scheme applied for the assessment testing protocol.

HUD and EPA surveys recognize homes, playgrounds, day care centers and other locations as potential sources contributing to a child's lead exposure. Additionally, HUD and EPA surveys confirm a relationship between the presence of LBP and lead in soil. The scope of this assessment is LBP and its associated hazards; however, the MCB Kaneohe Lead Activity Summary document does contain a discussion of the other potential sources for lead. For this LBP assessment, the analysis of LBP and lead in soil in residential playareas determines the lead hazard potential to the residents and workers of the MCB Kaneohe.

LEAD IN PAINT

Two pieces of playground equipment at separate locations were found to contain LBP. This includes the yellow pole at 1721 Lawrence Drive and the yellow slide at 2080 Campion. These LBP surfaces were identified as damaged at the time of inspection.

Appendix III (Table P - Lead in Paint Inspection Summary) provides a composite summary of the inspection results.

LEAD IN SOIL

Lead in soil sampling was conducted at sixty-four playareas. No lead in soil above the action level was found. The presence of LBP on playground equipment, however, creates the potential for elevated lead in soil levels if not properly maintained.

Appendix IV (Table S - Lead in Soil Inspection Summary) provides complete inspection results.

RECOMMENDATIONS

The fundamental step in the implementation of any plan to reduce lead hazards is a public relations package. The public relations package provides general information regarding the lead hazard minimization plan, an approach to implement the plan, and resident education guidance. Lead hazard minimization for playgrounds will include reduced contact and use of the equipment, resident education that provides tips regarding diet and personal hygiene, removal of the potential lead source from the environment, and follow-up assessments. Initial public awareness meetings with the residents and workers are of utmost importance. The MCB Kaneohe Document Package contains information on this subject.

The action priority for playground equipment containing LBP is the same, regardless of paint surface condition. This is due to the extensive use and contact by children, combined with changes in paint surface conditions from the effects of weathering.

Because of the interrelationship between LBP and lead-contaminated soil, it is important that the sources of lead be considered in proper order when conducting response activities. In general, lead hazard response actions for playground equipment should address LBP first, followed by lead in soil mitigation. This best avoids potential recontamination problems.

Table 2 outlines prioritization, response, and time-frame of action for the playground equipment affected.

LEAD IN PAINT

Replace or remove the paint from equipment containing lead-based paint within a short-term action response. Minimize potential hazards by limiting access and use of these playareas until completion of this action. Include resident education and disclosure related to these potential sources of lead exposure.

LEAD IN SOIL

No action response is required at this time for lead in soil. Perform follow-up lead in soil sampling after abatement of the LBP equipment.

HAZARD MINIMIZATIONShort-term

Replace equipment or remove LBP from components containing lead above the action limit within the short-term time period. Implement interim control measures until the hazards associated with lead-based paint and lead contaminated soil areas are abated. See Table 2 - Prioritization, Action Response, and Time-frame for details of the areas affected. Provide resident and worker notification, in addition to education, regarding potential lead exposure from these sources.

Table 2 - Prioritization, Action Response, and Time-Frame

Priority ¹	Location	Component	Action Response	Comments
SHORT-TERM				
Lead in Paint				
-	1721 Lawrence Drive	Yellow Pole	Removal	Discontinue use until removal
-	2080 Campion	Yellow Slide	Removal	Discontinue use until removal
¹ Priority ranks those components with the highest hazard potential first down to the least hazardous potential.				

REFERENCE FORM 22

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *DRAFT Lead Survey Report/Lead Risk Assessment Report, Mololani Housing Area, Marine Corps Base Hawaii, MCBH Kaneohe Bay, Hawaii.* Prepared for NAVFAC PACIFIC. Prepared by Environmental Science International, Inc., May 2007.

Pages Viewed: Entire document (see attached document)

Date Viewed: May 2007

Results: LBP data for MCBH Kaneohe Bay family housing reviewed and incorporated in ECP.

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Draft

Lead Survey Report / Lead Risk Assessment Report

**Mololani Housing Area
Marine Corps Base Hawaii
MCBH Kaneohe Bay, Hawaii**

May 2007

**Department of the Navy
Commander
Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134**



Contract Number: N62742-06-D-1891, CTO 0002

Executive Summary

Lead Survey Report

Fifty-six (56) of the 634 housing units within the Mololani Housing Area were inspected for lead-based paint (LBP). A total of 8,365 painted surfaces were tested using a portable x-ray fluorescence (XRF) analyzer to determine if lead was present at a concentration that exceeds the U.S. Environmental Protection Agency's (EPA's) definition of LBP of 1.0 milligrams per square centimeter (mg/cm²). Based on the HUD Guidelines, 22 component types met the criteria for community-wide lead-based painted surfaces.

The following components were identified as community-wide lead-based painted surfaces:

Interior: Shower Walls (ceramic)

Exterior: Attic Vent (metal), Door (wood), Door Casing (wood), Dryer Duct (metal), Exhaust Vent (metal), Fence (wood), Fence Post (metal), Panel Wall (wood), Pipe (metal), Storage Ceiling (wood), Storage Door (wood), Storage Pipe (metal), Storage Rafter (wood), Storage Shelf (wood), Storage Wall (wood), Support Beam (wood), Support Column (wood), Trim (wood), Vent (metal), Vent (wood), Window Casing (wood)

The following components were identified as isolated incidents of LBP:

Interior:

- Attic Access Panel (wood) in 1 unit (1782-A Lawrence Road)
- Crown Molding (wood) in 3 units (1978-B Hanson Circle, 2009-B Fleming Circle, 2122 Bancroft Drive)
- Closet Shelf (wood) in 3 units (1962-A Hanson Circle, 1966-B Hanson Circle, 1990-A Fleming Circle)
- Door Casing (wood) in 1 unit (2082-A Campion Drive)
- Panel Wall (wood) in 1 unit (1881-A Marmande Drive)
- Wall (wood) in 5 units (1775-A Lawrence Road, 1782-A Lawrence Road, 1964-A Hanson Circle, 1978-A Hanson Circle, 2210 Bauer Drive)
- Wall Trim (wood) in 1 unit (1821-B Harris Avenue)

Exterior:

- Support Base (concrete) in 3 units (1775-A Lawrence Road, 2009-B Fleming Circle, 2027-B Brown Drive)
- Attic Vent (wood) in 2 units (1789-A South Lawrence Road, 1971-B Hanson Circle)
- Ceiling (vinyl) in 4 units (1812 South Lawrence Road, 1962-A Hanson Circle, 1994-A Fleming Circle, 2016-A Fleming Circle)
- AC Panel (wood) in 1 unit (1825-B Harris Avenue)
- Wall (vinyl) in 1 unit (1994-B Fleming Circle)

Lead Risk Assessment Report

Twenty-six (26) housing units in the Mololani Housing Area were selected for a risk assessment (RA). The following LBP hazards were identified during the RA:

1. Paint Lead Hazard: community-wide hazard exists for Exterior Attic Vents (metal), Exterior Plumbing Pipes (metal), Exterior Support Beams (wood), Exterior Storage Ceilings (wood), Exterior Storage Rafters (wood)
2. Dust Lead Hazard:
 - a. Bare Floors: none
 - b. Window Sills: none
3. Soil Lead Hazard: none

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REFERENCE FORM 23

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC PACIFIC

Document Reviewed: *DRAFT Lead Survey Report/Lead Risk Assessment Report, Ulupau Housing Area, Marine Corps Base Hawaii, MCBH Kaneohe Bay, Hawaii.* Prepared for NAVFAC PACIFIC. Prepared by Environmental Science International, Inc., May 2007.

Pages Viewed: Entire document (see attached document)

Date Viewed: May 2007

Results: LBP data for MCBH Kaneohe Bay family housing reviewed and incorporated in ECP.

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Draft

**Lead Survey Report /
Lead Risk Assessment Report
Central and South Portion
Ulupau Housing Area
Marine Corps Base Hawaii
MCBH Kaneohe Bay, Hawaii**

May 2007

**Department of the Navy
Commander
Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134**



Contract Number: N62742-06-D-1891, CTO 0002

Executive Summary

Lead Survey Report

Twenty-eight (28) of the 296 housing units within the central and south portion of the Ulupau Housing Area were inspected for lead-based paint (LBP). A total of 3,647 painted surfaces were tested using a portable x-ray fluorescence (XRF) analyzer to determine if lead was present at a concentration that exceeds the U.S. Environmental Protection Agency's (EPA's) definition of LBP of 1.0 milligrams per square centimeter (mg/cm²). Based on the HUD Guidelines, none of the component types met the criteria for community-wide lead-based painted surfaces. Four housing units met the criteria for isolated instance of lead-based painted surfaces.

The following components were identified as isolated incidents of LBP:

Interior: Closet Shelf (wood), Door Casing (wood) in 2639-C Connor Loop
 Closet Shelf (wood) in 2640-A Connor Loop
 Door Casing (wood) in 2656-C Connor Loop

Exterior: Door (wood), Door Casing (wood) in 2656-C Connor Loop
 Upper Wall (wood), Carport Ceiling (wood) in 2661-C Connor Loop

Lead Risk Assessment Report

Twenty-one (21) housing units within the central and south portion of the Ulupau Housing Area were selected for a risk assessment (RA). The following LBP hazards were identified during the RA:

1. Paint Lead Hazard: no community-wide hazard exists.
2. Dust Lead Hazard:
 - a. Bare Floors: none
 - b. Window Troughs: none
3. Soil Lead Hazard: none

REFERENCE FORM 24

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of the Navy, NAVFAC PACIFIC

Document Reviewed: Radon Screening Data for MCBH Kaneohe Housing. Letter to NAVFAC PACIFIC from Oak Ridge National Laboratory, dated 27 February 2006.

Pages Viewed: Entire document (see attached)

Date Viewed: April 2007

Results: Information incorporated into the ECP.

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OAK RIDGE NATIONAL LABORATORY

MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY

821 Tri County Blvd
Oliver Springs, Tennessee 37840
(865) 435-9890

27 February 2006

Naval Facilities Engineering Command, Pacific
258 Makalapa Dr, Ste 100
Attn: (b) (6)
Environmental Compliance Division, Code EV12SN
Pearl Harbor, HI 96860-3134

Radon Screening Data for MCBH Kaneohe Housing

From December 2004 to May 2005 radon screening was performed in 400 housing units at Marine Corps Base Hawaii (MCBH) Kaneohe (attached). One Unit, 2530A Bingham Way, was found to have an elevated radon level of 5.6 picocuries per liter (pCi/L). This is greater than the action level recommended by the US Environmental Protection Agency (EPA) and the Navy Radon Assessment and Mitigation Program (NAVRAMP).

Testing of the unit to confirm the initial radon result was performed from August to December 2005 and found 3.2 pCi/L. Although the follow-up test is less than the 4 pCi/L action level, under EPA guidelines, the decision to mitigate is based on the average of the two results 4.4 pCi/L. With respect to NAVRAMP guidelines, an elevated measurement is considered confirmed if the follow-up test is greater than 4 pCi/L or greater than 50% of the initial value (i.e. > 2.8 pCi/L). We therefore recommend the mitigation of 2530A Bingham Way within the 5-year NAVRAMP timeline (CY 2011).

Since this first round of testing was a statistical screening to determine radon potential in the neighborhoods, the finding of a slightly elevated radon level at this housing unit indicates a potential for several more units to have elevated radon levels. Analysis of the data under NAVRAMP housing guidelines has identified two neighborhoods, FY 97 and Rainbow, in which full assessment is recommended. Accounting for the 71 units already tested in these neighborhoods, 303 units are recommended for further testing.

If I can be of any further assistance, please feel free to call me.

(b) (6)

Research Staff
Oak Ridge National Laboratory
(b) (6)

File:
Enclosures: Radon data.

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REFERENCE FORM 25

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of the Navy, NAVFAC PACIFIC

Document Reviewed: *FINAL Radon Testing Report for U.S. Marine Corps Base Hawaii Housing. Prepared for NAVFAC PACIFIC.* Prepared by from Oak Ridge National Laboratory. 17 January 2007.

Pages Viewed: Executive Summary (See attached Executive Summary)

Date Viewed: April 2007

Results: Information incorporated into the ECP.

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RADON TESTING REPORT
FOR U. S. MARINE CORPS BASE HAWAII HOUSING

17 January 2007

prepared for
NAVAL FACILITIES ENGINEERING COMMAND, PACIFIC
Environmental Compliance Division
Pearl Harbor, Hawaii 96860-7300

prepared by
OAK RIDGE NATIONAL LABORATORY
Buildings Technology Center
Oak Ridge, Tennessee 37831
managed by
UT-BATTELLE, LLC
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-00OR22725

EXECUTIVE SUMMARY

Radon is a naturally occurring, odorless, colorless, radioactive gas caused by the decay of uranium in soil. Because radon is chemically inert like helium, it can readily migrate from the soil to the surface. In the outdoors, radon rarely reaches concentrations of concern; however, within enclosed spaces, such as buildings, radon can accumulate to levels in excess of federally mandated exposure limits for radiation workers. In 1986, the U.S. Environmental Protection Agency (EPA) published action levels for indoor radon exposure (*A Citizen's Guide To Radon*, OPA-86-004). The guidance document recommended that corrective action be taken to reduce radon concentrations in excess of 4 pCi/L. In recognition of the public health hazard presented by indoor radon, the U.S. Congress passed and the President signed into law the *Indoor Radon Abatement Act of 1988* (IRAA). IRAA, part of Title III of the Toxic Substances Control Act (TSCA), declares the national goal to be "that the air within buildings in the United States should be as free of radon as the ambient air outside the buildings." In addition, the law stipulates that the head of each federal agency that manages a building will design a study to assess the extent of radon contamination in buildings within its jurisdiction and submit that plan to EPA. Because radon is naturally occurring, exposure to radon under NAVMED P-5055 is considered background radiation exposure. In 1989, the U.S. Surgeon General's Office stated that radon exposure is second only to smoking as a cause of lung cancer deaths in the United States. More recently (2003), the EPA estimated 21,000 lung cancer deaths in the United States were attributed to radon exposure annually (*A Citizen's Guide to Radon: The Guide to Protecting Yourself and Your Family from Radon*, EPA 402-R-03-003).

In recognition of the health hazard presented by indoor radon, by authority of the Chief of Naval Operations and with concurrence from the Commandant of the Marine Corps, the Naval Facilities Engineering Command (NAVFACENGCOM) established the Navy Radon Assessment and Mitigation Program (NAVRAMP). The objective of the program is to identify and mitigate Navy and Marine Corps buildings with radon in excess of the EPA 4-pCi/L action level. Marine Corps radon policy is covered under Section 6206 of MCO P5090.2A, July 10, 1998 which simply states that NAVRAMP is the official radon program for the U.S. Marine Corps.

In 1993, the U.S. Geological Survey, in cooperation with EPA published, *Geologic Radon Potential of EPA Region 9*, which included an overview of radon potential in Hawaii. The report stated that although the volcanic rock in Hawaii is low in uranium, thorium, and radium concentrations (parents of radon), these elements could be concentrated in soil containing iron during the erosion of the volcanic rock. The report further stated that this chemical deposition of the radon precursors could produce radon soil-gas concentrations of sufficient strength to result in homes testing >4 (picocuries per liter (pCi/L)).

Marine Corps Base Hawaii (MCBH) is an umbrella organization for approximately 11,000 service personnel stationed in Hawaii (<http://www.mcbh.usmc.mil>). MCBH manages the installations and natural resources located on a total of 4,500 acres

throughout the island of Oahu, including Camp Smith, Kaneohe Bay, Marine Corps Training Area Bellows, Manana Family Housing Area, Pearl City Warehouse Annex, and Puuolua Range Complex. The main activity, MCBH Kaneohe Bay is located on the windward side of Oahu, approximately 12 miles northeast of Honolulu. With respect to family housing, MCB Hawaii consists of approximately 2336 units in 17 neighborhoods located at 3 sites [Camp Smith (10 units), Manana (168 units), and MCB Kaneohe Bay (2158 units)] on Oahu. The large inventory of units contains a cross-section of every type of housing (e.g., single detached, duplex, apartments, and multiplex townhouse units and has 43 different interior styles.

Because the family housing at MCBH had not previously been tested for elevated radon, Phase I (screening) of the NAVRAMP is required. Briefly, 33 randomly selected units/neighborhood would be tested using long-term alpha track detectors (ATDs). In December 2004, duplicate collocated ATDs were placed in 453 MCB Hawaii units by NAVFAC Pacific and Oak Ridge National Laboratory (ORNL) staff in accordance with the NAVRAMP testing protocols. These detectors were retrieved by NAVFAC Pacific and ORNL in May 2005. Of the 453 units in which detectors were placed, 50 units had detectors that were lost or could not be retrieved. The losses, although significant, were not sufficient to require any additional screening in any neighborhoods. Of the 403 units in which radon data are available, one unit at MCB Kaneohe Bay (2530A Bingham Way) tested positive for elevated radon. Follow-up testing using duplicate collocated ATDs from August to December 2005 confirmed the presence of elevated radon in this unit. Because this unit contains confirmed levels of elevated radon, mitigation in accordance with the NAVRAMP Guidelines is recommended.

Detailed statistical analysis of the screening data by geological providence found no radon potential at the following neighborhoods: Camp Smith, Manana, Hawai'i Loa. Heleloa-Hilltop, Kapoho-Hillside, Nani Ulupau, and Ulupau. Therefore, in accordance with NAVRAMP Guidelines, no further testing is required for the remaining lifetime of these units. However, one unit located at MCBH Kaneohe Bay, 2530 A Bingham Way in the Waikulu-Rainbow neighborhood did test positive for elevated radon. Statistical analysis of screening data collected in neighborhoods residing on similar geology (costal plain providence) at the site found similar elevated radon potential. Therefore testing of the remaining units located at Pa Honua (Phase I and Phase II) is recommended. Because of plans to replace all housing at Waikulu-Rainbow by 2009, further radon testing in this neighborhood is not required until the construction project has been completed. For the other affiliated Waikulu areas (Waikulu -NCO Row, Waikulu-Manning Court) and Mololani because of the type of construction, additional radon testing is not required at this time. However, if these units are replaced or renovated in the future, radon screening would be required.

With respect to new construction, radon testing is recommended for Waikulu-Mokapu Court, Kaluapuni and the Pa Honua (Phase III) Replacement Project after construction has been completed.

Because Hana Like housing is privately owned and operated, screening was not included in this project. However, because of its close proximity to Waikulu-Rainbow, it is recommended that the owners be notified by MCB Hawaii Housing of the potential elevated radon risks at the site and that a full assessment be performed.

REFERENCE FORM 26

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: Department of Navy, NAVFAC Pacific

Document Reviewed: Letter Reports from White Environmental Consultants dated February 28, 2005 and Kauai Environmental, Inc. dated August 5, 2005. Memorandum from Kauai Environmental, Inc. dated February 10, 2006.

Pages Viewed: Entire Document (see attached)

Date Viewed:

Results: Chlordane was detected at various housing construction project areas. Provides verification that chlordane was used at MCBH Kaneohe Bay family housing.

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197 Sand Island Access Rd. Suite 203 Honolulu, Hawaii 96819

February 28, 2005

Hauske Environmental
PO Box 75-301
Kopolei, Hawaii 96707-0301

Attn: (b) (6)

RE: H-563 Replacement Housing KMCBH - Chlordane Soils Testing, Pond Circle Unit 2286 & 2288,

Background

Chlordane was historically sprayed around building foundations and adjacent soils for pest control. Other work practices consisted of saturating the building's gravel base with Chlordane prior to pouring the footings and slab. This presents possible disposal issues and worker exposure issues that should be addressed before demolition of the building slab.

Sampling

White Environmental Consultants Inc. performed composite soil sampling per your request on the aforementioned family housing sites for the purpose of determining residual Chlordane (CAS #12789-03-6) concentration levels prior to disturbance of the slabs and adjacent soils.

Results

The following is a summary of analytical results reported in milligrams per kilogram (mg/kg):

Sample ID #	Location	Result, mg/kg
C006-01	Unit# 2288	4.56
C006-02	Unit# 2288*	0.684
C006-03	Unit# 2286	25.0
C006-04	Unit# 2286	Void (error during analysis)

*DDT was detected at elevated levels but was not quantified

The State of Hawaii utilizes the Environmental Protection Agency's (EPA) Region 9 "Preliminary Remediation Goals (PRGs)" for guidance pertaining to contaminated sites. PRG's are risk-based concentrations that are intended to assist risk assessors and others in initial screening-level evaluations of environmental measurements. The PRGs published in the Region 9 PRG Table are used for preliminary comparisons prior to determining site-specific clean-up levels. The following levels are from Region 9 EPA's PRG contaminant table (see attached):

Region 9 PRG Level	Residential Soil (mg/kg)	Industrial Soil (mg/kg)
Chlordane	1.6	6.5 ✓
DDT	1.7	7.0 ✓

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2

197 Sand Island Access Rd. Suite 203 Honolulu, Hawaii 96819

Sample #'s C006-01 & C006-03 are above these suggested contamination levels for Chlordane. Sample# C006-02 is below the contamination level for Chlordane, but according to the sub-laboratory's preliminary reporting, during the analysis process an elevated concentration of DDT, also regulated by the EPA as a hazardous material, was detected. DDT was used as a pesticide for the same purposes as Chlordane and the environmental Protection Agency Region 9 (EPA) has also established preliminary remediation goals (RPG's) for this hazardous material.

Sample# C006-04 was voided due to sub-laboratory cross contamination (See attached sub-lab explanation).

Additionally, the EPA establishes disposal levels for contaminated soils. The Toxicity Characteristic Leachate Procedure (TCLP) is an EPA analytical test which determines levels for hazardous versus non-hazardous wastes. For Chlordane, the TCLP level is 0.03 milligrams per liter (mg/L). Milligrams per liter are roughly equivalent to mg/kg at lower concentrations. The TCLP preparation and analytical method published in EPA SW-846, Method 1311 has an intrinsic dilution factor of twenty from the original bulk analysis. In other words, a bulk soil tested for total Chlordane will theoretically have a corresponding TCLP result of (no greater than) 1/20th the original level.

Conclusions

1. Chlordane soil levels for the units listed and results reported above, are above Region 9 EPA's published PRGs.
2. DDT was detected at elevated levels, however it was not quantified.
3. Chlordane concentrations detected in soil may be of sufficient quantity to fail a TCLP test. TCLP test of soil is needed only if soils/concrete is slated for disposal or recycling.
4. Worker Protection and Disposal of contaminated soils/concrete can be addressed in the event Chlordane levels present a potential hazard to workers and/or TCLP tests are greater than 0.03 mg/L.

Recommendations

1. Re-sampling of soil at the location of sample # C006-04 to determine chlordane concentrations.
2. Re-analyze sample # C006-02 to quantify DDT levels.
3. Perform TCLP testing where required.
4. No digging, trenching or other soil disturbance activities should be performed until the project site has been adequately characterized for Chlordane and DDT.
5. Where digging, trenching or other soil disturbance activities are performed, and where Chlordane or DDT has been detected, workers should be adequately protected and exposure monitoring conducted to confirm worker protection is appropriate.

(b) (6)

CIH

White Environmental Consultants Inc.

TRANSMITTAL/REVIEW/APPROVAL

PH-PACDIV 4330/62 (REV. 2094)

DATE

10/27/2005

CONTRACT NO.

N62742-02-C-1313

TITLE

Replace 212 Family Housing Quarters, Kaneohe, Hawaii

FROM (CONTRACTOR)

Metcalf Construction Co., Inc.

TO

(b) (6)

SUBMITTAL NO.

02095-3a

FOR SPEC SECTION

02095

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SPEC. PARA. NO.

QCC CODE

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Update to Additional Chlordane Test Results
(original submittal dated 8/1/2005; submittal #02095-3)

1.3

A

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tract requirements and can be installed in the allocated spaces.

CONTRACTOR'S NAME & SIGNATURE

Metcalf Construction Co., Inc.

(b) (6) Q.C. Manager

10/27/05

FROM

SIGNATURE

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BY DIRECTION OF THE
RESIDENT OFFICER IN CHARGE OF CONSTRUCTION

KAUAI ENVIRONMENTAL INC.

August 5, 2005

(b) (6)

Project Manager, Metcalf Construction Company Inc. (MCCI)
Replacement of 212 Family Housing Quarters
Kaneohe Marine Corp Base Hawaii
Kaneohe, Hawaii

**SUBJECT: Results of Initial Chlordane Soil Sampling
Replacement of 212 Family Housing Quarters
Marine Corp Base Hawaii, Kaneohe, Hawaii**

(b) (6)

In July 2005, Kauai Environmental, Inc. (KEI) collected soil samples from various locations at the Replacement of Family Housing Quarters Project site on the Kaneohe Marine Corp Base Hawaii. The samples were collected from soil stockpiles, landscaped areas, and next to building footers to determine the concentration of chlordane. Thirty-five samples have been collected and analyzed for chlordane to date. Five of the initial fifteen samples were also tested to determine their hazardous waste characteristics for chlordane.

This letter report describes the soil sampling results and compares the results to established regulatory limits.

Soil Sampling and Analytical Methods

KEI collected composite samples from the surface and stockpiled soils at various locations around the project site (see attached map). With the exception of Samples 01-03 and 27-30, a backhoe was used to excavate a hole into the stockpiled soils. A composite sample of 10-15 sub-samples was then collected from the excavated soil to represent the average of all of the vertical levels within the stockpiles. All sub-samples were placed in a clean stainless steel bowl, mixed thoroughly, and then placed into a clean 4-oz. glass jar.

Samples 01-03 were collected from the top 6 inches of the topsoil in Area 1 at the site. These soils are topsoils that were screened, mixed and replaced around the new houses in this area. For each of these Area 1 samples, a composite sample of 10-15 sub-samples was collected to represent the sampled area. All sub-samples were placed in a clean stainless steel bowl, mixed thoroughly, and then placed into a clean 4-oz. glass jar.

KAUAI ENVIRONMENTAL INC.

Samples 27-30 were collected from the top 18 inches of the soil next to the framed footers of the two respective buildings under construction. Two holes were dug for each sample, with each hole having an approximate 2 foot by 2 foot horizontal dimension. A composite sample of 10-15 sub-samples was then collected from the excavated soil. All sub-samples were placed in a clean stainless steel bowl, mixed thoroughly, and then placed into a clean 4-oz. glass jar.

The composite soil samples were delivered to ESN Pacific in Honolulu for analysis. All of the samples were analyzed for chlordane using Environmental Protection Agency (EPA) Method EPA 8081A. Five of the first fifteen samples were also analyzed for leachable chlordane by EPA Method 1311/8081A using the Toxicity Characteristic Leaching Procedure (TCLP) to determine the hazardous waste characteristics. The ESN Northwest laboratory analyzed these TCLP samples.

Results

All of the samples contained detectable levels of chlordane (detection limit of 0.1 milligrams per kilogram, or mg/kg). Most of the concentrations were consistent in the chlordane concentration for the sampled stockpiled soil and topsoil with a range of 0.4-4.5 mg/kg. However, 3 of the 4 samples collected near the footers were significantly higher with a range between 29-57 mg/kg.

The results of these analyses are presented in Table 1. Laboratory reports are attached as an appendix to this report.

Table 1
Chlordane Soil Sampling Results

Sample Number	Sample Date	Sample Location	Chlordane Concentration (mg/kg)
SSKP0705-01	7 / 22	Area 1: Around Unit 106	1.5
SSKP0705-02	7 / 22	Area 1: Between Units 1-3	1.5
SSKP0705-03	7 / 22	Area 1: Between Units 6-9	3.3
SSKP0705-04	7 / 22	Area 2: Topsoil Stockpiled in B-Court (north pile)	2.1
SSKP0705-05	7 / 22	Area 2: Topsoil Stockpiled in B-Court (south pile)	2.0
SSKP0705-06	7 / 22	Area 3 Park Stockpile (north pile on west side)	0.9
SSKP0705-07	7 / 22	Area 3 Park Stockpile (north pile on east side)	1.3
SSKP0705-08	7 / 22	Area 3 Park Stockpile (south pile on north side)	0.4
SSKP0705-09	7 / 22	Area 3 Park Stockpile (south pile on northwest side)	2.0

KAUAI ENVIRONMENTAL INC.

Sample Number	Sample Date	Sample Location	Chlordane Concentration (mg/kg)
SSKP0705-10	7 / 22	Area 3 Park Stockpile (south pile on west side)	1.7
SSKP0705-11	7 / 22	Area 3 Park Stockpile (south pile on southwest side)	2.8
SSKP0705-12	7 / 22	Area 3 Park Stockpile (south pile on south side)	2.3
SSKP0705-13	7 / 22	Area 3 Park Stockpile (south pile on southeast side)	2.0
SSKP0705-14	7 / 22	Area 3 Park Stockpile (south pile on east side)	3.4
SSKP0705-15	7 / 22	Area 3 Park Stockpile (south pile on northeast side)	2.6
SSKP0705-16	7 / 27	1.5 inch & minus stockpile east of screener on south side	2.4
SSKP0705-16 Duplicate	7 / 27	1.5 inch & minus stockpile east of screener on south side	3.0
SSKP0705-17	7 / 27	1.5 inch & minus stockpile east of screener on north side	2.0
SSKP0705-18	7 / 27	Prescreened excess stockpile northwest of screener	0.9
SSKP0705-19	7 / 27	1.5 inch & minus stockpile east of Unit 77	4.5
SSKP0705-20	7 / 27	1.5 inch & minus stockpile north of Unit 70	1.8
SSKP0705-21	7 / 29	Coral sample from Area 3	< 0.10
SSKP0705-22	7 / 29	Coral sample from Area 3	< 0.10
SSKP0705-23	7 / 29	Coral sample from Area 4	< 0.10
SSKP0705-24	7 / 29	Coral sample from Area 4	< 0.10
SSKP0705-25	7 / 29	Coral sample from Area 4	< 0.10
SSKP0705-26	7 / 29	Topsoil stockpile north of Unit 15	3.6
SSKP0705-27	7 / 29	Top foot along footer on north side of Unit 59 (two sample points)	1.1
SSKP0705-28	7 / 29	Top foot along footer on west side of Unit 58 (two sample points)	57
SSKP0705-29	7 / 29	Top foot along footer on west side of Unit 57 (two sample points)	37
SSKP0705-30	7 / 29	Top foot along footer on east side of Unit 66 (two sample points)	29
SSKP0705-31	7 / 29	Stockpile east of prototypes on north end	2.7
SSKP0705-32	7 / 29	Stockpile east of prototypes on south end	2.7
SSKP0705-33	7 / 29	Stockpile south of Unit 41 on northwest end	0.9
SSKP0705-34	7 / 29	Stockpile south of Unit 41 on northeast side	0.5

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Sample Number	Sample Date	Sample Location	Chlordane Concentration (mg/kg)
SSKP0705-35	7 / 29	Stockpile south of Unit 39	2.4

mg/kg: milligrams per kilogram = part per million (ppm)

The TCLP results for the 5 analyzed samples are provided in Table 2. All of the samples had detectable chlordane concentrations with a range between 0.001-0.004 milligrams per liter (mg/l). The EPA regulatory level is 0.03 mg/l.

Table 2. Chlordane Soil Sampling TCLP Results

Sample Number	Sample Date	Sample Location	TCLP Chlordane Concentration (mg/l)
SSKP0705-03	7 / 22	Area 1: Between Units 6-9	0.001
SSKP0705-05	7 / 22	Area 2: Topsoil Stockpiled in B-Court (south pile)	0.001
SSKP0705-07	7 / 22	Area 3 Park Stockpile (north pile on east side)	< 0.001
SSKP0705-11	7 / 22	Area 3 Park Stockpile (south pile on southwest side)	0.001
SSKP0705-14	7 / 22	Area 3 Park Stockpile (south pile on east side)	0.004

mg/l: milligrams per liter

0.03 mg/l is EPA regulatory level

TCLP = Toxicity Characteristic Leaching Procedure

Conclusions

KEI collected soil samples at various locations around the site in July 2005 for a determination of chlordane concentrations. The samples were collected primarily from stockpiles at the site, while three samples were collected from the soils used as topsoil in Area 1 and another four samples were collected from the soil next to building footers in Area 5.

All of the samples contained detectable chlordane concentrations with a range for most of the samples between 0.4-4.5 mg/kg. However, 3 of the 4 footer samples had significantly higher concentrations ranging from 29-57 mg/kg. The State of Hawaii Department of Health (DOH)'s has adopted an Environmental Action Levels (EALs) of 1.6 mg/kg for chlordane as an initial screening concentration to assist in the identification of a potential health hazard. In addition, the project specifications (Section 02095) require worker protection provisions for persons potentially

KAUAI ENVIRONMENTAL INC.

coming into contact with the soils or dust generated during handling of the material.

The 4 samples analyzed by TCLP were all below the EPA regulatory level. The highest concentration was 0.004 mg/l, while the regulatory level is 0.03 mg/l.

In addition to the worker exposure issue, Metcalf Construction should ensure that all relevant state and federal regulations, project specifications and base policies are followed in the management of this material and in the selection and placement of topsoil around the houses on this project.

Sincerely,

(b) (6)

A large black rectangular redaction box covers the signature area.

Senior Environmental Scientist

Reference

Hawaii DOH, 2005. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater Interim Final, May 2005.

TRANSMITTAL/REVIEW/APPROVAL
PH-PACDIV 4330/62 (REV. 2004)

DATE
3/27/2006

CONTRACT NO. N02742-02-C-1313		TITLE Replace 212 Family Housing Quarters, Kaneohe, Hawaii	
FROM (CONTRACTOR) Metcalf Construction Co., Inc.	TO (b) (6) CME	TRANSMITTAL NO. 02095-32	FOR SPEC SECTION 02095

ENCL.	NO. COPIES	ITEM	DESCRIPTION	SPEC. PARA. NO.	QC CODE
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1	3	31	Chlordane, Heptachlor, and Heptachlor Epoxide Results of Grass Samples.	1.3	A

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I hereby certify that the material submitted herein conforms to exact requirements and can be installed in the proposed space.

CONTRACTOR'S NAME & SIGNATURE
Metcalf Construction Co., Inc.
(b) (6) QC Manager

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RESIDENT OFFICER IN CHARGE OF CONSTRUCTION

Memorandum:

To: (b) (6) General Manager, Metcalf Construction
From: (b) (6) CIH, CSP
Date: February 10, 2006

SUBJECT: Chlordane, Heptachlor, and Heptachlor Epoxide Results of Grass Samples Collected on January 27, 2006 at the Kaneohe MCBH 212 Replacement of Housing Quarters Site

Kauai Environmental, Inc. collected grass samples at selected on-site locations on January 27, 2006. The samples were analyzed for chlordane, a chemical termite insecticide, and two by-products (heptachlor and heptachlor epoxide).

The grass samples were collected from locations that had relatively high chlordane concentrations in the soil and had not been sprayed (recently, at least) with an herbicide. The five samples in Table 1 were collected from 3-5 spots at each location. The samples were analyzed for total chlordane, heptachlor, and heptachlor epoxide by ESN Pacific in Honolulu.

Table 1. Grass Sample Results

Sample Number, Location, and Previous Chlordane Concentration in the Soil	Chlordane (mg/kg)	Heptachlor (mg/kg)	Heptachlor Epoxide (mg/kg)
WS-01: Between Units 38-39, comprised of grass and roots without dirt (previous soil sample in area: 104 mg/kg) Note: not much grass was available in the middle of this area where the soil sample had been collected, so the grass sample was collected from the edge of the area near the NW corner of Bldg. 39).	0.25	<0.005	<0.005
WS-02: Stockpile 4 on east side, comprised of mostly grass (previous soil sample in area: 2.0 and 3.4 mg/kg)	<0.05	<0.005	<0.005
WS-03: South of Bldg. 105, comprised of grass with some roots without dirt (previous soil sample in area: 2.8 and 17 mg/kg):	0.62	<0.005	<0.005
WS-04: Between Bldgs. 56-57, comprised of grass and roots with some remaining dirt (previous soil sample in area: 18 mg/kg)	0.68	<0.005	<0.005
WS-05: Between Bldgs. 75-76, comprised of grass and roots without dirt (previous soil sample in area: 10 mg/kg)	0.2	<0.005	<0.005
PRG / EAL	1.6	0.110	0.053

REFERENCE FORM 27

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: R.M. Towill Corporation

Document Reviewed: Historical Aerial Photographs

Pages Viewed: Various Years (see attached summaries)

Date Viewed: March 2007

Results: Historical aerial photographs were used to investigate the historic use on the property.

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Contract: N62742-06-D-1891
Project No: 106097
Project: MCBH PPV Phase 4

Historical Aerial Photograph Review

Reviewed by: (b) (6)
Date of Review: 23 March 2007
Source: R.M. Towill Corporation

Date of Photograph(s): 29 August 1953
Location: Kaneohe MCBH

Summary of Findings

Ulupau - Undeveloped with vegetation.

Pa Honua Phase 3 – Majority of area undeveloped with vegetation. Mokapu Road present to the south. One road parallel to Mokapu transects area with some small structures present. Three structures near present location of Building 6435.

Mololani - A small part of the northern portion of Mololani (approximately at Bancroft Drive) is not visible on the photograph. The majority of the area is undeveloped with vegetation. Maclachlan Street extends further east than at present, and is located north and parallel to Middaugh Street. Harris Avenue is present and extends further north than at present. Two other roads (possibly Daly Road) extend to the northwest. Approximately twelve buildings are located on the north side of Maclachlan Street.

Contract: N62742-06-D-1891
Project No: 106097
Project: MCBH PPV Phase 4

Historical Aerial Photograph Review

Reviewed by: (b) (6)
Date of Review: 23 March 2007
Source: R.M. Towill Corporation

Date of Photograph(s): 6 January 1955
Location: Kaneohe MCBH

Summary of Findings

Ulupau - No coverage

Pa Honua Phase 3 – No coverage

Mololani - No coverage.

Contract: N62742-06-D-1891
Project No: 106097
Project: MCBH PPV Phase 4

Historical Aerial Photograph Review

Reviewed by: (b) (6)
Date of Review: 23 March 2007
Source: R.M. Towill Corporation

Date of Photograph(s): 9 January 1968
Location: Kaneohe MCBH

Summary of Findings

Ulupau - No change from 1953 photograph.

Pa Honua Phase 3 – Area is developed with different buildings than present.

Mololani - Developed with present day configuration.

Contract: N62742-06-D-1891
Project No: 106097
Project: MCBH PPV Phase 4

Historical Aerial Photograph Review

Reviewed by: (b) (6)
Date of Review: 23 March 2007
Source: R.M. Towill Corporation

Date of Photograph(s): 22 December 1969, 6 October 1969
Location: Kaneohe MCBH

Summary of Findings


Ulupau - No change from 1968 photograph.

Pa Honua Phase 3 – No change from 1968 photograph.

Mololani - No change from 1968 photograph.

Contract: N62742-06-D-1891
Project No: 106097
Project: MCBH PPV Phase 4

Historical Aerial Photograph Review

Reviewed by: 
Date of Review: 23 March 2007
Source: R.M. Towill Corporation

Date of Photograph(s): 10 November 1990
Location: Kaneohe MCBH

Summary of Findings

Ulupau - Neighborhood is developed with present configuration.

Pa Honua Phase 3 – No change from 1969 photograph.

Mololani - No change from 1969 photograph.

Contract: N62742-06-D-1891
Project No: 106097
Project: MCBH PPV Phase 4

Historical Aerial Photograph Review

Reviewed by: (b) (6)
Date of Review: 23 March 2007
Source: R.M. Towill Corporation

Date of Photograph(s): 15 November 1991
Location: Kaneohe MCBH

Summary of Findings

Ulupau - No change from 1990 photograph.

Pa Honua Phase 3 - No change from 1990 photograph.

Mololani - No change from 1990 photograph.

Contract: N62742-06-D-1891
Project No: 106097
Project: MCBH PPV Phase 4

Historical Aerial Photograph Review

Reviewed by: (b) (6)
Date of Review: 23 March 2007
Source: R.M. Towill Corporation

Date of Photograph(s): 15 April 1992
Location: Kaneohe MCBH

Summary of Findings

Ulupau - No change from 1991 photograph.

Pa Honua Phase 3 – No change from 1991 photograph.

Mololani - No change from 1991 photograph.

Contract: N62742-06-D-1891
Project No: 106097
Project: MCBH PPV Phase 4

Historical Aerial Photograph Review

Reviewed by: (b) (6)
Date of Review: 23 March 2007
Source: R.M. Towill Corporation

Date of Photograph(s): 10 January 1998, 1 July 1999
Location: Kaneohe MCBH

Summary of Findings

Ulupau - No change from 1992 photograph.

Pa Honua Phase 3 – Redeveloping area just west of the Maintenance/Office and Maintenance/Warehouse areas. No coverage from 1999 photograph.

Mololani - No change from 1992 photograph.

REFERENCE FORM 28

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Environmental Compliance Protection Department

Document Reviewed: *Site Inspection, Quarry Pit Landfill, Marine Corps Air Station, Kaneohe Bay, Hawaii.* Prepared for NAVFAC PACIFIC.
Prepared by Harding Lawson Associates. 20 September 1989.

Pages Viewed: Cover and Executive Summary (See attached Cover and Executive Summary)

Date Viewed: April 2007

Results: Information reviewed and incorporated in ECP.

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030020021887

Harding Lawson Associates

A Report Prepared for

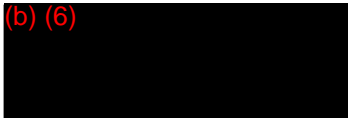
Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, Hawaii 96860-7300

SITE INSPECTION
QUARRY PIT LANDFILL
MARINE CORPS AIR STATION
KANEHOE BAY, HAWAII

HLA Job No. 02176,284.06

by

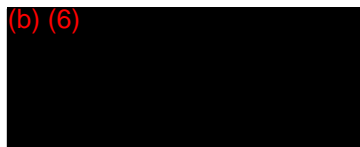
(b) (6)



by BSW

Civil Engineer - 6185

(b) (6)



Engineering Geologist - 1056 (California)

Harding Lawson Associates
803 Kamehameha Highway, Room 404
Pearl City, Hawaii 96782

September 20, 1989

0028R

EXECUTIVE SUMMARY

This report presents the results of the Site Inspection for the Quarry Pit Landfill at the Marine Corps Air Station, Kaneohe Bay (MCASK), Oahu. The purpose of this site inspection is to evaluate if wastes disposed at the landfill pose a threat to human health or the environment.

The scope of services for this project includes installing nine monitoring wells, collecting and chemically analyzing ground-water samples, conducting a water-level survey, and preparing a technical report.

Based on our water-level survey at the Quarry Pit Landfill, ground-water migration directions are south and east towards the nearest shorelines. Contaminants, if present on or in the ground water, are likely to migrate in the same directions. Wells MW-B, MW-3, MW-4, and MW-5 are upgradient of the landfill. The ground water at these locations should not be affected by the landfill. Wells MW-1, MW-2, MW-6, MW-7, and MW-8 are all downgradient of some portion of the landfill. The ground water at these locations could be affected by the landfill if contaminants are leaching from the landfill and migrating with the ground water.

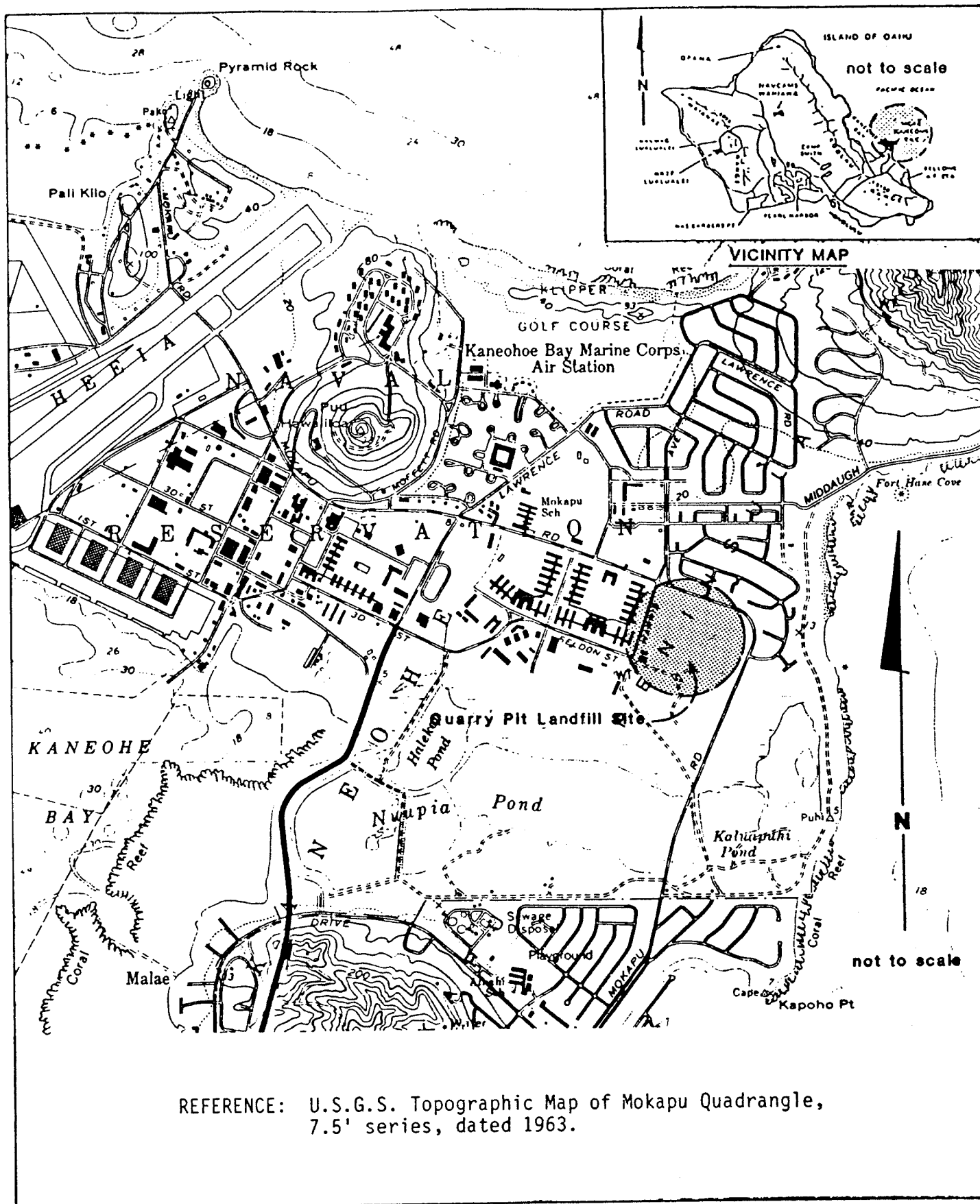
The samples from the downgradient wells did not contain any of the analytes of interest except the sample from Well MW-6. 1,1-Dichloroethene (1,1-DCE) was the only analyte detected in this sample. 1,1-DCE was barely detected at its detection limit of 1.0 ug/l. This concentration was below the maximum contaminant level for 1,1-DCE of 7 ug/l. 1,1-DCE was not detected in any of the downgradient wells from Well MW-6 (MW-7 and MW-8); 1,1-DCE is apparently a low-concentration, local occurrence and is not likely a threat to human health or the environment.

Organic vapors were detected in the soil cuttings above the water table during the drilling of Well MW-3. During the purging and sampling of MW-3, no organic vapors were detected. Chemical analytes were not found in the ground-water sample from Well MW-3. Well MW-3 is upgradient of the landfill. Thus, the source of organic vapors is apparently not related to the landfill. The source is likely a localized occurrence of

organic chemicals within the soil above the ground-water level. Soil samples should be collected near this well to assess the identity and concentrations of compounds present in the soil for public health purposes.

Well MW-5 is upgradient of the landfill. This well is 250 feet directly downgradient of the Exchange Service Station (Buildings 1666 and 1667). Four 10,000-gallon capacity fiberglass underground storage tanks for gasoline are present at this site. The analytes in the ground-water samples from Well MW-5 are components of gasoline and petroleum fuels. Therefore, we infer that the source of the contaminants is unrelated to the landfill. The gas station is a most likely source of the petroleum components in the ground water at Well MW-5. The source of contaminants in the ground water at Well MW-5 should be identified and corrected.

Except for petroleum-related compounds in the ground-water sample from Well MW-5 and a negligible concentration of 1,1-DCE in the ground-water sample from Well MW-6, no analytes were found in the ground-water samples from the wells surrounding the landfill. We infer that there is no significant contamination of the ground water related to the landfill, and wastes disposed there pose no apparent threat to human health or the environment. We recommend no further action to investigate the Quarry Pit Landfill relative to hazardous wastes and materials as long as the landfill remains in its present state. However, if MCASK constructs on the site, further study addressing the impacts of construction on the landfill and surrounding areas may be warranted.



Harding Lawson Associates
Engineers, Geologists
& Geophysicists

Site Location Map
Quarry Pit Landfill
Marine Corps Air Station
Kaneohe Bay, Hawaii

PLATE

1

DRAWN
HKP

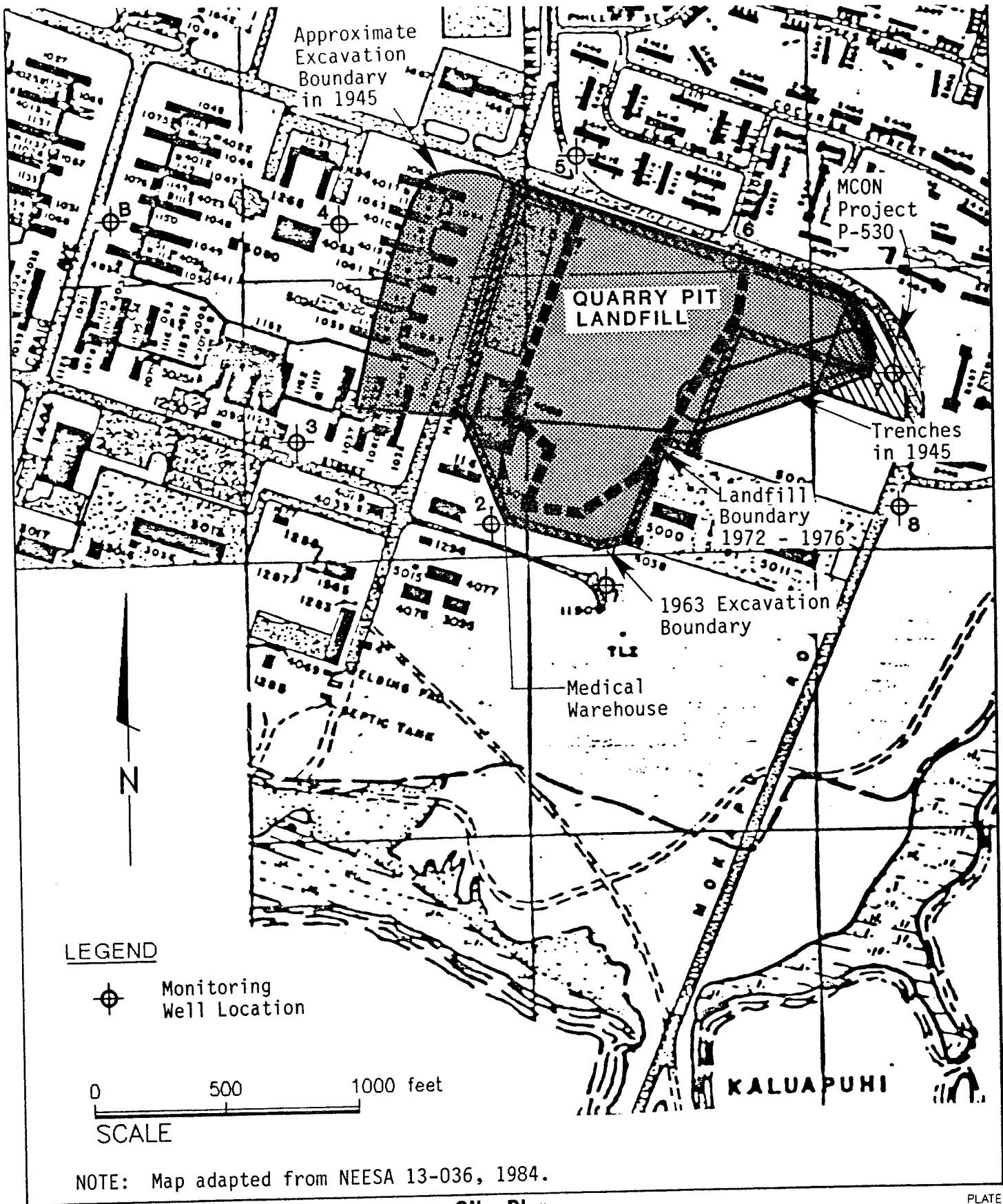
JOB NUMBER
02176,284.06

APPROVED
AM

DATE
05/89

REVISED

DATE



Harding Lawson Associates
Engineers, Geologists
& Geophysicists

Site Plan
Quarry Pit Landfill
Marine Corps Air Station
Kaneohe Bay, Hawaii

PLATE

2

DRAWN

JOB NUMBER

APPROVED

DATE

REVISED

DATE

gwl

02176,284.06

AM

05/89

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REFERENCE FORM 29

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Environmental Compliance Protection Department

Document Reviewed: *SI Report for Building 454 Disposal Area, Marine Corps Air Station Kaneohe Bay, Hawaii*. Prepared for NAVFAC PACIFIC. Prepared by from Ogden. November 1993.

Pages Viewed: Cover and Executive Summary (See attached Cover and Executive Summary)

Date Viewed: April 2007

Results: Information reviewed and incorporated in ECP.

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**Comprehensive Long-Term Environmental Action Navy
CLEAN**

Contract No. N62742-90-D-0019

CTO No. 0010

Navy Remedial Project Manager:

(b) (6)

Ogden CTO Manager:

(b) (6)

**SITE INSPECTION REPORT
FOR
BUILDING 454 DISPOSAL AREA
MARINE CORPS AIR STATION KANEOHE BAY,
KANEOHE, HAWAII
VOLUME I - TECHNICAL REPORT AND APPENDICES**

Prepared for:

**Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, Hawaii 96860**

Prepared by:

**Ogden Environmental and Energy Services
680 Iwilei Road, Suite 660
Honolulu, Hawaii 96817**

November 1993

EXECUTIVE SUMMARY

This report presents the results, conclusions, and recommendations of a site inspection (SI) and human health risk assessment (HRA) performed by Ogden Environmental and Energy Services Company Inc. (Ogden) for the Pacific Division, Naval Facilities Engineering Command (PACNAVFACENGCOM) under Comprehensive, Long-Term Environmental Action Navy (CLEAN) contract number N62742-90-D-0019, Contract Task Order (CTO) No. 0010. The SI was performed at the Marine Corps Air Station (MCAS) Kaneohe Bay, Building 454 Disposal Area (the "site") in accordance with the Revised Statement of Work (SOW) for CTO No. 0010 issued by PACNAVFACENGCOM dated May 3, 1991. The purpose of the SI was to investigate, and preliminarily evaluate, waste disposal areas adjacent to Building 454 which may have been contaminated as a result of past waste disposal practices. The objectives of the SI, as stated in the SOW were to:

- Confirm or deny the suspected contamination based on field sampling of environmental media and laboratory analysis and recommend whether a remedial investigation/feasibility study (RI/FS) is warranted; and
- Perform a quantitative risk assessment, if significant contamination is detected, to determine whether or not the compounds pose a threat to human health and the environment.

According to the *Initial Assessment Study (IAS) of Marine Corps Air Station, Kaneohe Bay, Hawaii* (NEESA 1984), the Building 454 Disposal Area received over 24,000 gallons of waste oil, 3,600 gallons of solvents, and 2,000 gallons of sulfuric acid over a period of approximately 10 years, from 1971 to 1981. The waste oils, solvents, and sulfuric acid resulting from vehicle maintenance activities, were reportedly disposed directly on the unpaved ground adjacent to Building 454 for dust control. Representatives from the U.S. Environmental Protection Agency (EPA) Region IX reviewed the findings of the IAS and, after discussions with PACNAVFACENGCOM representatives, requested that further investigation be performed at the site.

Ogden conducted SI field sampling activities at the site in two separate phases. Phase I of the field sampling effort was conducted in July and October of 1991 and consisted of the collection of 14 surface soil samples (including 2 duplicates), 27 subsurface soil samples (including 3 duplicates), 2 background soil samples, and 10 ground-water samples (including 2 duplicates). Phase I samples were collected from locations presumed to have been impacted by past waste disposal activities. These samples were screened in the field for volatile organic compounds (VOCs) with an organic vapor monitor and analyzed in the laboratory for the following constituents: total petroleum hydrocarbons (TPH) by EPA Method 418.1, total fuel hydrocarbons (TFH) by EPA Method 8015 Modified; halogenated and aromatic VOCs by EPA Methods 8010, 8020, and 8240; semivolatile organic compounds (SVOCS) and polynuclear aromatic hydrocarbons (PAHs) by EPA Methods 8270 and 8310; polychlorinated biphenyls (PCBs) by EPA Method 8080; and priority pollutant metals by EPA Methods 6010 and 7000 series.

Following evaluation of the chemical analytical data from the Phase I field sampling activities, Ogden identified six compounds of concern (COCs) which required further sampling and delineation at the site to provide sufficient data for performance of the HRA based upon the proposed future use of the site as a Child Development Center (CDC) and Base Exchange. The six COCs identified are: arsenic, cadmium, chromium, mercury, nickel, and lead.

Phase II of the SI field sampling effort was conducted in June of 1992 and consisted of the collection of 73 surface soil samples (including 6 duplicates) and 17 background surface soil samples (including 2 duplicates). Phase II samples were collected from a systematic sampling grid designed to provide coverage of the entire site. These samples were analyzed for the six COCs by EPA Methods 6010 and 7000 series.

Statistical analysis of the Phase II sampling data established reasonable maximum exposure (RME) concentrations for the six COCs to be input into the HRA for potential onsite and offsite receptors for three future land use scenarios:

- 1) Evaluation of the health risk to future CDC attendees (child/worker) assuming the CDC is constructed at the site and the six COCs are left in the surface soil at existing concentrations. The HRA concludes that the maximum individual excess cancer risk due to each exposure pathway (ingestion, inhalation, dermal adsorption) is greatest for

the onsite adult at 7.0×10^{-6} . The total excess cancer risk for the onsite child is less than half of that value at 2.9×10^{-6} . The cumulative noncancer hazard indices estimated for the onsite child and adult are 7.0×10^{-1} and 7.1×10^{-2} , respectively. Results of the analysis for lead exposure indicates that 2.7% of the sensitive population (i.e., children) is estimated to be above the EPA-recommended blood-lead level of concern in children ($10 \mu\text{g/dL}$).

- 2) Evaluation of the health risk to onsite construction workers, adjacent adult residents, and adjacent residential children due to COC emissions during the construction of the CDC and Base Exchange. For this scenario, the HRA concludes that the maximum individual excess cancer risk due to each exposure pathway for the onsite construction worker is 1.7×10^{-6} , while the excess cancer risk to residential adults and sensitive receptors (i.e., children) is 1.2×10^{-6} . The cumulative noncancer hazard indices estimated for the onsite construction worker, offsite residential adult, and offsite sensitive receptor are 3.6×10^{-1} , 1.9×10^{-3} , and 8.6×10^{-3} , respectively. Results of the analysis for lead exposure indicate that 2.9% of the sensitive population (i.e., children) is estimated to be above the EPA-recommended blood-lead level of concern ($10 \mu\text{g/dL}$).
- 3) Evaluation of the incremental health risk to future CDC attendees (child/worker) due to COC emissions during the construction of the Base Exchange in the adjacent lot, assuming the CDC has been constructed and is in operation. For this scenario, the HRA concludes that the maximum individual excess cancer risk due to each exposure pathway for the CDC child/worker is 1.5×10^{-7} . The incremental noncancer risk for the CDC child and worker is 1.6×10^{-2} and 3.4×10^{-3} , respectively. The results for the lead analysis are the same as for the No-action scenario (i.e., 2.7% of the sensitive population is predicted to exhibit blood-levels exceeding $10 \mu\text{g/dL}$).

EPA currently evaluates potential carcinogenic risks in relation to an acceptable risk range of 1.0×10^{-4} to 1.0×10^{-6} (one in ten thousand to one in a million), as established by the National Contingency Plan. As indicated above, the excess cancer risk for all receptors falls near the lower bound of this range. Similarly, the total noncancer hazard indices for all receptors are less than 1.0, which is currently judged to be adequately protective of human health by the EPA. For the evaluation of the health risk due to lead, EPA has established an agency-wide

goal that no more than 5% of the sensitive population have blood-lead levels above the 10 µg/dL level of concern. As indicated above, the results of the lead analysis show the percent of the sensitive population predicted to potentially be over 10 µg/dL for all scenarios is no more than 2.9%. It should be noted that the percent of the population predicted to be over the 10 µg/dL due to assumed national background for lead is 1.52%. Therefore, the incremental risk increase is minimal.

Based upon the evaluation of all field and analytical data collected during the SI, and upon the results of the HRA, the following conclusions are made for this SI:

- Surface soils were found to contain elevated levels of TFH, quantitated as diesel fuel, during both Phase I and Phase II sampling episodes. However, significant levels of VOCs, SVOCs, PCBs, or PAHs were not detected by the laboratory in any surface soil sample. Additionally, headspace screening of all surface soil samples for VOCs with an organic vapor monitor did not yield measurements above ambient air levels in any sample. Based on these results, the volatile and semivolatile constituents of the reported wastes appear to have dissipated, or were never originally present. Because potentially toxic compounds have not been detected in surface soils, the TFH is not considered to warrant concern for the site.
- A release of product from the underground storage tank located west of Building 454 (UST No. 32) has occurred, and has impacted soil and ground water in the immediate vicinity of the UST; subsurface soil samples collected from this location were stained with petroleum product and were found to contain TFH. Ground-water samples collected from monitoring well MW-4, located next to the UST, were found to contain TFH quantitated as gasoline, benzene, toluene, ethylbenzene, xylenes, naphthalene, and 2-methylnaphthalene, suggesting that the product released from the UST contains both volatile and semivolatile constituents, and has reached ground water. Ethylbenzene and naphthalene were detected in MW-4 at concentrations which exceed current Hawaii Department of Health (DOH) Interim Cleanup Guidelines for ground water (DOH 1992).
- Subsurface soils and ground-water samples collected from throughout the Site, with the exception of the vicinity of UST No. 32, were not found to contain detectable levels of

TPH, TFH, VOCs, SVOCs, PAHs, or PCBs; metals concentrations in subsurface soils and ground water do not appear to be elevated significantly above background concentrations. Based on these data it appears that hazardous substances reportedly discharged to surface soils may have dissipated and/or degraded at the surface, and do not appear to have migrated through the soil column.

The baseline HRA evaluated the risk to human health of leaving the six identified COCs (arsenic, cadmium, chromium, mercury, nickel, and lead) in place in surface soils given the proposed future land use scenario which includes construction of the CDC and Base Exchange. The HRA performed for the six COCs identified in surface soils concluded that there is minimal increased health risk to construction workers and adjacent residents during construction of the CDC/Base Exchange, or to future CDC occupants (child/worker). Using chemical data collected during this SI, currently available toxicological data, currently accepted HRA methodologies, and currently available future land use site plans, the HRA has indicated that the existing levels of the detected organic and inorganic compounds in surface soils do not pose an unacceptable health risk to future site occupants (i.e., CDC children or adult workers), or to construction workers or adjacent residents during construction of the CDC/Base Exchange. The technical and scientific results of the Ogden HRA support a recommendation that remediation of surface soils at the site is not warranted prior to construction of the CDC/Base Exchange. However, Ogden notes that potential public concern regarding use of the site as a CDC is not addressed by this recommendation.

Based on the findings and conclusions presented above, Ogden recommends the following work be performed at the site:

- All product should be immediately removed from UST No. 32 to prevent further releases; the product should be tested to determine its composition and constituents. The UST should be permanently closed in accordance with federal UST regulations stipulated in the Resource Conservation and Recovery Act (RCRA, 40 CFR Part 280, Subparts F and G) and State of Hawaii DOH guidelines. Any contaminated soil and/or ground water discovered in the vicinity of the UST should be remediated to existing federal and State of Hawaii regulations and guidelines.

REFERENCE FORM 30

Project Name: Environmental Condition of Property to Support Hawaii Public-Private Venture Housing Phase 4, Marine Corps Base Hawaii
Housing Areas: Mololani, Pa Honua 3, & Ulupau, Kaneohe Bay, Hawaii

Property Location: MCBH Kaneohe Bay

Repository Name: MCBH Environmental Compliance Protection Department

Document Reviewed: USACE. 2001. *Range Identification and Preliminary Range Assessment, Marine Corps Base Hawaii and Associated Sites, Oahu, Hawaii*. Prepared for USACE. Prepared by USACE ST. Louis District. December 2001.

Pages Viewed: Pages 2-5 and 2-6 (See attached cover and pages 2-5 and 2-6 [Range Identification and Preliminary Range Assessment, Small Arms & Malfunction Range])

Date Viewed: May 2007

Results: Information reviewed and incorporated in ECP.

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**US Army Corps
of Engineers**

HUNTSVILLE ENGINEERING
AND SUPPORT CENTER



FINAL

ARCHIVE SEARCH REPORT

Marine Corps Base, Hawaii and Associated Sites

Oahu, Hawaii

DECEMBER 2001

Prepared by
US Army Corps of Engineers
ST. LOUIS DISTRICT



**US Army Corps
of Engineers**

HUNTSVILLE ENGINEERING
AND SUPPORT CENTER



FINAL

RANGE IDENTIFICATION AND PRELIMINARY RANGE ASSESSMENT

**Marine Corps Base, Hawaii
and
Associated Sites**

Oahu, Hawaii

DECEMBER 2001

Prepared by
US Army Corps of Engineers
ST. LOUIS DISTRICT



**US Army Corps
of Engineers**

HUNTSVILLE ENGINEERING
AND SUPPORT CENTER



FINAL

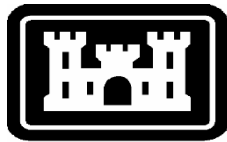
REPORT PLATES

Marine Corps Base, Hawaii and Associated Sites

Oahu, Hawaii

DECEMBER 2001

Prepared by
US Army Corps of Engineers
ST. LOUIS DISTRICT



**US Army Corps
of Engineers**

HUNTSVILLE ENGINEERING
AND SUPPORT CENTER



FINAL

**ARCHIVE SEARCH REPORT
APPENDIX C**

**Marine Corps Base, Hawaii
and
Associated Sites**

Oahu, Hawaii

DECEMBER 2001

Prepared by
US Army Corps of Engineers
ST. LOUIS DISTRICT

2.1 SMALL-ARMS & MALFUNCTION RANGE

Two historical photographs identify a small arms range near the beach on Kaneohe Bay. One photo is captioned, “Gunnery School Small Arms & Malfunction” while the second (same range) is captioned, “Vertical Malfunction Range” (n.a. 1943j, 1943k). No written documentation describing the range or activities on the range was found during research. The location of this former range now makes up a portion of the base golf course; no evidence of the range remains.

2.1.1 RANGE IDENTIFICATION

Common Name of Range: Small Arms & Malfunction Range, Vertical Malfunction Range

Range Identification Number: To be determined.

Current Range Status: The original specified range use has been discontinued. The range is now within the boundaries of the base golf course.

DoD Point of Contact:

Name: (b) (6)
Address: Environmental Department (LE)
Marine Corps Base Hawaii
Kaneohe Bay, HI 96863-3002
Telephone: (b) (6)

Location (see PLATE MCBH-15): Marine Corps Base Hawaii, Kaneohe Bay

City: Marine Corps Base Hawaii, Kaneohe Bay
Island: Oahu
State: Hawaii

Ownership Interests: U.S. Marine Corps

Known Deed Restrictions: None identified.

General Types of Munitions used: Small arms. Ordnance data sheets are included in APPENDIX A.

Information Current as of: November 1999

2.1.2 PRELIMINARY RANGE ASSESSMENT

TYPES OF MUNITIONS EMPLOYED	FUZE TYPE
Small arms	None

NOTE: No information has been uncovered to provide an estimated quantity of munitions used on this range.

Time Frame of Use: 1940s

Locations within Range of Known Munitions Use: Weapons would have been restricted to the firing lines with direction of fire being north.

Estimated Density of Munitions: Low

Estimated Depth of Munitions: Complete rounds would normally be located on the surface; but over the years construction and other ground movement may have caused the rounds to be buried to unknown depths.

Information on Past Range Clearances: No record of a range clearance was found during research. Standard operating procedures (SOP) would have required users to police firing lines for spent brass and unfired rounds. In addition, significant ground modifications have taken place due to the construction of the golf course.

Specific Munitions Safety Issues: General safety issues are discussed in SECTION 3.0.

Types of Targets: Typically, targets were paper, cardboard, and wood.

Other Past Uses: No previous range activity has been identified.

Anticipated Future Use: The former range is located within the limits of the base golf course, which is operational and will continue in that capacity.

Public Access: The golf course is open to official users and their guests.

APPENDIX C

EDR Reports

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EDR DataMap® Area Study

**Kaneohe Marine Core Base
Kailua, HI 96734**

December 20, 2006

Inquiry number 01817434.3r

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR).

TARGET PROPERTY INFORMATION

ADDRESS

KAILUA, HI 96734
KAILUA, HI 96734

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records within the requested search area for the following databases:

FEDERAL RECORDS

NPL	National Priority List
Proposed NPL	Proposed National Priority List Sites
Delisted NPL	National Priority List Deletions
NPL RECOVERY	Federal Superfund Liens
CERC-NFRAP	CERCLIS No Further Remedial Action Planned
RCRA-SQG	Resource Conservation and Recovery Act Information
ERNS	Emergency Response Notification System
HMIRS	Hazardous Materials Information Reporting System
US ENG CONTROLS	Engineering Controls Sites List
US INST CONTROL	Sites with Institutional Controls
FUDS	Formerly Used Defense Sites
US BROWNFIELDS	A Listing of Brownfields Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
ODI	Open Dump Inventory
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
MINES	Mines Master Index File
RAATS	RCRA Administrative Action Tracking System

STATE AND LOCAL RECORDS

SHWS	Sites List
SWF/LF	Permitted Landfills in the State of Hawaii
SPIILLS	Release Notifications

EXECUTIVE SUMMARY

INST CONTROL	Sites with Institutional Controls
VCP	Voluntary Response Program Sites
DRYCLEANERS	Permitted Drycleaner Facility Listing
BROWNFIELDS	Brownfields Sites
AIRS	List of Permitted Facilities

TRIBAL RECORDS

INDIAN RESERV	Indian Reservations
INDIAN LUST	Leaking Underground Storage Tanks on Indian Land
INDIAN UST	Underground Storage Tanks on Indian Land

EDR PROPRIETARY RECORDS

Manufactured Gas Plants... EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

FEDERAL RECORDS

CERCLIS: The Comprehensive Environmental Response, Compensation and Liability Information System contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the CERCLIS list, as provided by EDR, and dated 08/09/2006 has revealed that there is 1 CERCLIS site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>MARINE CORPS BASE HI KANEOHE B</i>	<i>MCAS KANEOHE MOKAPU PEN</i>	<i>1</i>	<i>3</i>

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 09/27/2006 has revealed that there is 1 CORRACTS site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>MARINE CORPS BASE HI KANEOHE B</i>	<i>MCAS KANEOHE MOKAPU PEN</i>	<i>1</i>	<i>3</i>

EXECUTIVE SUMMARY

RCRAInfo: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System(RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-TSDF list, as provided by EDR, and dated 06/13/2006 has revealed that there is 1 RCRA-TSDF site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
MARINE CORPS BASE HI KANEOHE B	MCAS KANEOHE MOKAPU PEN	1	3

RCRAInfo: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System(RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-LQG list, as provided by EDR, and dated 06/13/2006 has revealed that there is 1 RCRA-LQG site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
MARINE CORPS BASE HI KANEOHE B	MCAS KANEOHE MOKAPU PEN	1	3

DOD: Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 12/31/2004 has revealed that there is 1 DOD site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
KANEOHE MARINE CORPS AIR STATI		0	3

EXECUTIVE SUMMARY

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 10/11/2006 has revealed that there is 1 FINDS site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
MARINE CORPS BASE HI KANEOHE B	MCAS KANEOHE MOKAPU PEN	1	3

STATE AND LOCAL RECORDS

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Health's Active Leaking Underground Storage Tank Log Listing.

A review of the LUST list, as provided by EDR, and dated 08/11/2006 has revealed that there are 34 LUST sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 1182, TANK KB53	2	12
USMC - KANEOHE MARINE CORPS BA Facility Status: Site Cleanup Completed	BLDG 504, TANK KB121	2	13
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 247, TANK KB21	2	13
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 1361, TANKS KB68	2	14
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 3014 TANK KB83	2	14
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 566 TANK KB84 AND	2	15
USMC - KMCAS Facility Status: Site Cleanup Completed Facility Status: Site Cleanup Completed	BLDG 1178 KB50, KB51,	2	16
USMC - KANEOHE MARINE COPRS BA Facility Status: Site Cleanup Completed	BLDG 1669, TANK KB97	2	17
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 1281 TANK KB58 KB5	2	17
USMC - KMCAS Facility Status: LUST Cleanup Initiated: Petroleum	BLDG 1184, TANKS KB54	2	18
USMC - KMCAS Facility Status: LUST Cleanup Initiated: Petroleum Facility Status: LUST Cleanup Initiated: Petroleum	BLDG 78 KB8 BLDG 127	2	19

EXECUTIVE SUMMARY

Site	Address	Map ID	Page
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 1661 KB74	2	20
USMC - KANEOHE MARINE CORPS BAS Facility Status: Case Transferred to HEER	BLDG 5009, TANK KB114	2	20
USMC - KANEOHE MARINE CORPS BA Facility Status: LUST Cleanup Initiated: Petroleum Facility Status: LUST Cleanup Initiated: Petroleum	BLDG 322, TANK KB100,	2	21
USMC - MARINE BASE CORPS HAWAI Facility Status: Site Cleanup Completed	BLDG 4079, TANK KB101	2	21
USMC - KMCAS Facility Status: LUST Cleanup Initiated: Petroleum	BLDG 207 TANK 17, 18,	2	22
USMC - KMCAS Facility Status: LUST Cleanup Initiated: Petroleum Facility Status: Site Cleanup Completed	BLDG 1667, TANKS KB75,	2	22
USMC - KANEOHE BAY MARINE BASE Facility Status: Site Cleanup Completed	BLDG 4041, TANK KB-4041	2	24
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 1091, TANKS KB45,	2	24
USMC - MARINE BASE CORPS HAWAI Facility Status: Site Cleanup Completed	BLDG 105 TANK KB9	2	25
USMC - KMCAS Facility Status: LUST Cleanup Initiated: Petroleum	BLDG 373 TANK KB-6A, K	2	26
USMC - KANEOHE MARINE CORP BAS Facility Status: Case Transferred to HEER	BLDG 322, TANK KB373-2	2	27
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 1696 TANK KB82	2	27
USMC - KMCAS Facility Status: Case Transferred to HEER Facility Status: Case Transferred to HEER	/ BLDG 329 TANK KB329	2	28
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 1282 KB62	2	34
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 501 TANK KB38	2	34
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 1172 TANK KB49	2	35
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 1284 TANK 65	2	35
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 171, TANK KB2, KB3	2	36
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 385 KB27 & KB28	2	37
USMC - KMCAS Facility Status: Site Cleanup Completed	BLDG 132 TANK KB13, KB	2	38
USMC - KMCAS Facility Status: Case Transferred to HEER	TANK KB-565, RADAR RD E	3	39
USMC - MARINE CORPS BASE HAWAI Facility Status: Site Cleanup Completed	6TH / C ST TANK KB-K17-	5	40

EXECUTIVE SUMMARY

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
USMC - MARINE CORPS BASE HAWAI Facility Status: Case Transferred to HEER	BLDG 256 - 3RD ST TANK	6	40

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Health's Listing of Underground Storage Tanks.

A review of the UST list, as provided by EDR, and dated 08/11/2006 has revealed that there are 31 UST sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>USMC - KMCAS</i>	<i>BLDG 1182, TANK KB53</i>	<i>2</i>	<i>12</i>
<i>USMC - KANEHOE MARINE CORPS BA</i>	<i>BLDG 504, TANK KB121</i>	<i>2</i>	<i>13</i>
<i>USMC - KMCAS</i>	<i>BLDG 247, TANK KB21</i>	<i>2</i>	<i>13</i>
<i>USMC - KMCAS</i>	<i>BLDG 1361, TANKS KB68</i>	<i>2</i>	<i>14</i>
<i>USMC - KMCAS</i>	<i>BLDG 3014 TANK KB83</i>	<i>2</i>	<i>14</i>
<i>USMC - KMCAS</i>	<i>BLDG 566 TANK KB84 AND</i>	<i>2</i>	<i>15</i>
<i>USMC - KMCAS</i>	<i>BLDG 1178 KB50, KB51,</i>	<i>2</i>	<i>16</i>
<i>USMC - KANEHOE MARINE COPRS BA</i>	<i>BLDG 1669, TANK KB97</i>	<i>2</i>	<i>17</i>
<i>USMC - KMCAS</i>	<i>BLDG 1281 TANK KB58 KB5</i>	<i>2</i>	<i>17</i>
<i>USMC - KMCAS</i>	<i>BLDG 1184, TANKS KB54</i>	<i>2</i>	<i>18</i>
<i>USMC - KMCAS</i>	<i>BLDG 78 KB8 BLDG 127</i>	<i>2</i>	<i>19</i>
<i>USMC - KMCAS</i>	<i>BLDG 1661 KB74</i>	<i>2</i>	<i>20</i>
<i>USMC - KANEHOE MARINE CORPS BA</i>	<i>BLDG 322, TANK KB100,</i>	<i>2</i>	<i>21</i>
<i>USMC - MARINE BASE CORPS HAWAI</i>	<i>BLDG 4079, TANK KB101</i>	<i>2</i>	<i>21</i>
<i>USMC - KMCAS</i>	<i>BLDG 207 TANK 17, 18,</i>	<i>2</i>	<i>22</i>
<i>USMC - KMCAS</i>	<i>BLDG 1667, TANKS KB75,</i>	<i>2</i>	<i>22</i>
<i>USMC - KANEHOE BAY MARINE BASE</i>	<i>BLDG 4041, TANK KB-4041</i>	<i>2</i>	<i>24</i>
<i>USMC - KMCAS</i>	<i>BLDG 1091, TANKS KB45,</i>	<i>2</i>	<i>24</i>
<i>USMC - MARINE BASE CORPS HAWAI</i>	<i>BLDG 105 TANK KB9</i>	<i>2</i>	<i>25</i>
<i>USMC - KMCAS</i>	<i>BLDG 373 TANK KB-6A, K</i>	<i>2</i>	<i>26</i>
<i>USMC - KMCAS</i>	<i>BLDG 1696 TANK KB82</i>	<i>2</i>	<i>27</i>
<i>USMC - KMCAS</i>	<i>/BLDG 329 TANK KB329</i>	<i>2</i>	<i>28</i>
<i>USMC - KMCAS</i>	<i>BLDG 1282 KB62</i>	<i>2</i>	<i>34</i>
<i>USMC - KMCAS</i>	<i>BLDG 501 TANK KB38</i>	<i>2</i>	<i>34</i>
<i>USMC - KMCAS</i>	<i>BLDG 1172 TANK KB49</i>	<i>2</i>	<i>35</i>
<i>USMC - KMCAS</i>	<i>BLDG 1284 TANK 65</i>	<i>2</i>	<i>35</i>
<i>USMC - KMCAS</i>	<i>BLDG 171, TANK KB2, KB3</i>	<i>2</i>	<i>36</i>
<i>USMC - KMCAS</i>	<i>BLDG 385 KB27 & KB28</i>	<i>2</i>	<i>37</i>
<i>USMC - KMCAS</i>	<i>BLDG 132 TANK KB13, KB</i>	<i>2</i>	<i>38</i>
<i>USMC - KMCAS</i>	<i>BLDG 454 TANK KB-32 / C</i>	<i>4</i>	<i>39</i>
<i>USMC - MARINE CORPS BASE HAWAI</i>	<i>6TH AND C ST TANK KB-K1</i>	<i>5</i>	<i>39</i>

EXECUTIVE SUMMARY

Please refer to the end of the findings report for unmapped orphan sites due to poor or inadequate address information.



Scale in Miles



01817434.3r - 20 Dec 06



157° 46' 00"

MAP FINDINGS SUMMARY

<u>Database</u>	<u>Total Plotted</u>
<u>FEDERAL RECORDS</u>	
NPL	0
Proposed NPL	0
Delisted NPL	0
NPL RECOVERY	0
CERCLIS	1
CERC-NFRAP	0
CORRACTS	1
RCRA TSD	1
RCRA Lg. Quan. Gen.	1
RCRA Sm. Quan. Gen.	0
ERNS	0
HMIRS	0
US ENG CONTROLS	0
US INST CONTROL	0
DOD	1
FUDS	0
US BROWNFIELDS	0
CONSENT	0
ROD	0
UMTRA	0
ODI	0
TRIS	0
TSCA	0
FTTS	0
SSTS	0
ICIS	0
PADS	0
MLTS	0
MINES	0
FINDS	1
RAATS	0
<u>STATE AND LOCAL RECORDS</u>	
SHWS	0
State Landfill	0
LUST	34
UST	31
SPILLS	0
INST CONTROL	0
VCP	0
DRYCLEANERS	0
BROWNFIELDS	0
AIRS	0
<u>TRIBAL RECORDS</u>	
INDIAN RESERV	0

MAP FINDINGS SUMMARY

<u>Database</u>	<u>Total Plotted</u>
INDIAN LUST	0
INDIAN UST	0
<u>EDR PROPRIETARY RECORDS</u>	
Manufactured Gas Plants	0

NOTES:

Sites may be listed in more than one database

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

**DOD
Region**

**KANEOHE MARINE CORPS AIR STATION
KANEOHE MARINE CORPS AIR (County), HI**

**DOD CUSA047675
N/A**

DOD:

Feature 1: Marine Corps DOD
Feature 2: Not reported
Feature 3: Not reported
URL: Not reported
Name 1: Kaneohe Marine Corps Air Station
Name 2: Not reported
Name 3: Not reported
State: HI
DOD Site: Yes
Tile name: HIHONOLULU

1

**MARINE CORPS BASE HI KANEOHE BAY
MCAS KANEOHE MOKAPU PENINSULA
M C B H KANEOHE BAY, HI 96863**

**CERCLIS 1000375041
FINDS HI6170022762
HAZNET
RCRA-LQG
RCRA-TSDF
CORRACTS**

CERCLIS:

Site ID: 0902919
Federal Facility: Federal Facility
NPL Status: Not on the NPL
Non NPL Status: Other Cleanup Activity: Federal Facility-Lead Cleanup

CERCLIS Site Contact Name(s):

Contact Name: (b) (6)
Contact Tel: (b) (6)
Contact Title: Site Assessment Manager (SAM)

Contact Name: (b) (6)
Contact Tel: (b) (6)
Contact Title: Site Assessment Manager (SAM)

Contact Name: (b) (6)
Contact Tel: (b) (6)
Contact Title: Site Assessment Manager (SAM)

CERCLIS Site Alias Name(s):

Alias Name: ARMY LDFL
Alias Address: ON OR NR HWY H-3 TO GATE
KANEOHE BAY, HI 96863
Alias Name: NAVY LDFL
Alias Address: HARRIS ST & MOKAPU RD
KANEOHE BAY, HI 96863
Alias Name: MARINE LDFL
Alias Address: ABOVE FT HASE COVE SW OF:
ULUPAU CRATER, HI 96863
Alias Name: MCAS KANEOHE BAY
Alias Address: Not reported
HI
Alias Name: KANEOHE BAY MARINE CORPS AIR STATION
Alias Address: MCAS KANEOHE BASE MOAKAPU
KANEOHE BAY, HI 96863
Alias Name: KANEOHE BAY MCAS SKEET RANGE

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

MARINE CORPS BASE HI KANEOHE BAY (Continued)

1000375041

Alias Address: MCAS KANEOHE BASE MOAKAPU
KANEOHE BAY, HI 96863
Alias Name: MARINE CAMP H.M. SMITH
Alias Address: HALAWA HEIGHTS HEADQUARTERS - AIEA
AIEA, HI

Site Description: Not reported

CERCLIS Assessment History:

Action: DISCOVERY
Date Started: Not reported
Date Completed: 01/01/1980
Priority Level: Not reported

Action: PRELIMINARY ASSESSMENT
Date Started: Not reported
Date Completed: 03/01/1986
Priority Level: Low

Action: SITE INSPECTION
Date Started: Not reported
Date Completed: 10/07/1991
Priority Level: High

Action: EXPANDED SITE INSPECTION
Date Started: Not reported
Date Completed: 09/28/1995
Priority Level: Recommended for HRS Scoring

Action: EXPANDED SITE INSPECTION
Date Started: 10/31/1995
Date Completed: 08/02/1996
Priority Level: Recommended for HRS Scoring

FINDS:

Other Pertinent Environmental Activity Identified at Site

CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System) is the Superfund database that is used to support management in all phases of the Superfund program. The system contains information on all aspects of hazardous waste sites, including an inventory of sites, planned and actual site activities, and financial information.

HI-UST (Hawaii - Underground Storage Tank). Hawaii Underground Storage Tank Program regulates underground storage tanks which store petroleum or hazardous substances and offers documents and data products for downloading.

PCS (Permit Compliance System) is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

MARINE CORPS BASE HI KANEOHE BAY (Continued)

1000375041

TRIS (Toxics Release Inventory System) contains information from facilities on the amounts of over 300 listed toxic chemicals that these facilities release directly to air, water, land, or that are transported off-site.

HAZNET:

Gepaid: HI6170022762
Contact: COMMANDING GENERAL MCBH
Telephone: 8082576920
Facility Addr2: Not reported
Mailing Name: Not reported
Mailing Address: BOX 63002
Mailing City,St,Zip: KANEOHE BAY MCBH, HI 968633002
Gen County: 99
TSD EPA ID: CAD089446710
TSD County: Los Angeles
Waste Category: Off-specification, aged, or surplus organics
Disposal Method: Transfer Station
Tons: .0595
Facility County: 99

Gepaid: HI6170022762
Contact: COMMANDING GENERAL MCBH
Telephone: 8082576920
Facility Addr2: Not reported
Mailing Name: Not reported
Mailing Address: BOX 63002
Mailing City,St,Zip: KANEOHE BAY MCBH, HI 968633002
Gen County: 99
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Waste Category: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
Disposal Method: Recycler
Tons: 0.1395
Facility County: 99

Gepaid: HI6170022762
Contact: COMMANDING GENERAL MCBH
Telephone: 8082576920
Facility Addr2: Not reported
Mailing Name: Not reported
Mailing Address: BOX 63002
Mailing City,St,Zip: KANEOHE BAY MCBH, HI 968633002
Gen County: 99
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Waste Category: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)
Disposal Method: Recycler
Tons: 0.0815
Facility County: 99

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

MARINE CORPS BASE HI KANEOHE BAY (Continued)

1000375041

Gepaid: HI6170022762
Contact: COMMANDING GENERAL MCBH
Telephone: 8082576920
Facility Addr2: Not reported
Mailing Name: Not reported
Mailing Address: BOX 63002
Mailing City,St,Zip: KANEOHE BAY MCBH, HI 968633002
Gen County: 99
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Waste Category: Unspecified solvent mixture Waste
Disposal Method: Recycler
Tons: 0.293
Facility County: 99

Gepaid: HI6170022762
Contact: COMMANDING GENERAL MCBH
Telephone: 8082576920
Facility Addr2: Not reported
Mailing Name: Not reported
Mailing Address: BOX 63002
Mailing City,St,Zip: KANEOHE BAY MCBH, HI 968633002
Gen County: 99
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Waste Category: Waste oil and mixed oil
Disposal Method: Recycler
Tons: 9.789
Facility County: 99

[Click this hyperlink](#) while viewing on your computer to access
75 additional CA_HAZNET: record(s) in the EDR Site Report.

RCRAInfo Corrective Action Summary:

Event: CA Prioritization, Facility or area was assigned a medium corrective action
priority.
Event Date: 01/10/1994

Event: Stabilization Measures Evaluation,This facility is not amenable to
stabilization activity because of a lack of technical data. An evaluation
has been completed, but further data is necessary to determine stabilization
measures, feasibility or appropriateness. This status should be changed when
data becomes available.
Event Date: 01/10/1994

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

MARINE CORPS BASE HI KANEOHE BAY (Continued)

1000375041

RCRAInfo:

Owner: MARINE CORPS AIR STATION KANEOHE BAY
(808) 257-2316
EPA ID: HI6170022762

Contact: (b) (6)
(b) (6)

Classification: Large Quantity Generator, TSDF
TSDF Activities: Not reported

BIENNIAL REPORTS:

Last Biennial Reporting Year: 2003

Waste	Quantity (Lbs)	Waste	Quantity (Lbs)
D001	52304.00	D002	25055.00
D005	30264.00	D006	36413.00
D007	40071.00	D008	17691.00
D009	4042.00	D010	5663.00
D011	5442.00	D019	5738.00
D035	7282.00	F002	133.00
F005	133.00	U151	64.00

Violation Status: Violations exist

Regulation Violated: 264.170-177.I
Area of Violation: TSD-OTHER REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 05/08/2001
Actual Date Achieved Compliance: 04/21/2003

Enforcement Action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date: 03/11/2002
Penalty Type: Final Monetary Penalty

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 05/08/2001
Penalty Type: Final Monetary Penalty

Regulation Violated: 270
Area of Violation: TSD-OTHER REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 05/08/2001
Actual Date Achieved Compliance: 04/21/2003

Enforcement Action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date: 03/11/2002
Penalty Type: Final Monetary Penalty

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 05/08/2001
Penalty Type: Final Monetary Penalty

Regulation Violated: 262.30-34.C
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 05/08/2001
Actual Date Achieved Compliance: 04/21/2003

Enforcement Action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date: 03/11/2002
Penalty Type: Final Monetary Penalty

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 05/08/2001
Penalty Type: Final Monetary Penalty

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

MARINE CORPS BASE HI KANEOHE BAY (Continued)

1000375041

Regulation Violated:	262.10-12.A
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	05/08/2001
Actual Date Achieved Compliance:	04/21/2003
Enforcement Action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date:	03/11/2002
Penalty Type:	Final Monetary Penalty
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	05/08/2001
Penalty Type:	Final Monetary Penalty
Regulation Violated:	279.20-24
Area of Violation:	09UOG
Date Violation Determined:	05/08/2001
Actual Date Achieved Compliance:	04/21/2003
Enforcement Action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date:	03/11/2002
Penalty Type:	Final Monetary Penalty
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	05/08/2001
Penalty Type:	Final Monetary Penalty
Regulation Violated:	GCP
Area of Violation:	09GCP
Date Violation Determined:	09/12/2000
Actual Date Achieved Compliance:	04/21/2003
Enforcement Action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date:	03/11/2002
Penalty Type:	Final Monetary Penalty
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	09/12/2000
Penalty Type:	Final Monetary Penalty
Regulation Violated:	262.10-12.A
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	09/12/2000
Actual Date Achieved Compliance:	04/21/2003
Enforcement Action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date:	03/11/2002
Penalty Type:	Final Monetary Penalty
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	09/12/2000
Penalty Type:	Final Monetary Penalty
Regulation Violated:	GMC
Area of Violation:	09GMC
Date Violation Determined:	09/12/2000
Actual Date Achieved Compliance:	04/21/2003
Enforcement Action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date:	03/11/2002
Penalty Type:	Final Monetary Penalty
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	09/12/2000
Penalty Type:	Final Monetary Penalty

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

MARINE CORPS BASE HI KANEOHE BAY (Continued)

1000375041

Regulation Violated:	279.20-24
Area of Violation:	09UOG
Date Violation Determined:	09/12/2000
Actual Date Achieved Compliance:	04/21/2003
Enforcement Action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date:	03/11/2002
Penalty Type:	Final Monetary Penalty
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	09/12/2000
Penalty Type:	Final Monetary Penalty
Regulation Violated:	GTG
Area of Violation:	09GTG
Date Violation Determined:	09/12/2000
Actual Date Achieved Compliance:	04/21/2003
Enforcement Action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date:	03/11/2002
Penalty Type:	Final Monetary Penalty
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	09/12/2000
Penalty Type:	Final Monetary Penalty
Regulation Violated:	262.30-34.C
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	09/12/2000
Actual Date Achieved Compliance:	04/21/2003
Enforcement Action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date:	03/11/2002
Penalty Type:	Final Monetary Penalty
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	09/12/2000
Penalty Type:	Final Monetary Penalty
Regulation Violated:	262.10-12.A
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	07/25/1997
Actual Date Achieved Compliance:	06/19/2000
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	07/25/1997
Penalty Type:	Not reported
Regulation Violated:	268.7
Area of Violation:	GENERATOR-LAND BAN REQUIREMENTS
Date Violation Determined:	07/25/1997
Actual Date Achieved Compliance:	06/19/2000
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	07/25/1997
Penalty Type:	Not reported
Regulation Violated:	262.50-60
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	07/25/1997
Actual Date Achieved Compliance:	06/19/2000
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	07/25/1997

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

MARINE CORPS BASE HI KANEOHE BAY (Continued)

1000375041

Penalty Type:	Not reported
Regulation Violated:	262.40-43.D
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	07/25/1997
Actual Date Achieved Compliance:	06/19/2000
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	07/25/1997
Penalty Type:	Not reported
Regulation Violated:	262.20-23.B
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	07/25/1997
Actual Date Achieved Compliance:	06/19/2000
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	07/25/1997
Penalty Type:	Not reported
Regulation Violated:	268.7
Area of Violation:	GENERATOR-LAND BAN REQUIREMENTS
Date Violation Determined:	07/25/1997
Actual Date Achieved Compliance:	06/19/2000
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	07/25/1997
Penalty Type:	Not reported
Regulation Violated:	262.10-12.A
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	07/25/1997
Actual Date Achieved Compliance:	06/19/2000
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	07/25/1997
Penalty Type:	Not reported
Regulation Violated:	262.10-12.A
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	07/25/1997
Actual Date Achieved Compliance:	06/19/2000
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	07/25/1997
Penalty Type:	Not reported
Regulation Violated:	262.10-12.A
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	07/25/1997
Actual Date Achieved Compliance:	06/19/2000
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	07/25/1997
Penalty Type:	Not reported
Regulation Violated:	262.10-12.A
Area of Violation:	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined:	03/29/1989
Actual Date Achieved Compliance:	02/23/1990
Enforcement Action:	WRITTEN INFORMAL
Enforcement Action Date:	11/22/1989
Penalty Type:	Not reported

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

MARINE CORPS BASE HI KANEOHE BAY (Continued)

1000375041

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 01/29/1990
Penalty Type: Not reported

Regulation Violated: 262.50-60
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 01/31/1986
Actual Date Achieved Compliance: 10/14/1986

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 09/16/1985
Penalty Type: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 09/18/1986
Penalty Type: Not reported

Regulation Violated: 262.20-23.B
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 01/31/1986
Actual Date Achieved Compliance: 10/14/1986

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 09/18/1986
Penalty Type: Not reported

Regulation Violated: 262.10-12.A
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 02/21/1985
Actual Date Achieved Compliance: 01/31/1986

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 09/16/1985
Penalty Type: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 09/18/1986
Penalty Type: Not reported

Penalty Summary:			
Penalty Description	Penalty Date	Penalty Amount	Lead Agency
Final SEP Credit	5/8/2001	62800	STATE

There are 24 violation record(s) reported at this site:

Evaluation	Area of Violation	Date of Compliance
CDI	TSD-OTHER REQUIREMENTS (OVERSIGHT)	20030421
	TSD-OTHER REQUIREMENTS (OVERSIGHT)	20030421
	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20030421
	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20030421
	09UOG	20030421
Compliance Evaluation Inspection	09GCP	20030421
	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20030421
	09GMC	20030421
	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20030421
	09GTG	20030421
	09UOG	20030421
Compliance Evaluation Inspection	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20000619
	GENERATOR-LAND BAN REQUIREMENTS	20000619
	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20000619
	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20000619

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

MARINE CORPS BASE HI KANEOHE BAY (Continued)

1000375041

	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20000619
	GENERATOR-LAND BAN REQUIREMENTS	20000619
	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20000619
	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20000619
	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	20000619
Compliance Evaluation Inspection	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	19900223
Compliance Evaluation Inspection	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	19861014
	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	19861014
Compliance Evaluation Inspection	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	19860131

CORRACTS:

EPA ID: HI6170022762
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 01/10/1994
Action: CA075ME - CA Prioritization, Facility or area was assigned a medium corrective action priority
NAICS Code(s): 92811
92811 - National Security

2

USMC - KMCAS
BLDG 1182, TANK KB53
KANEOHE MARINE CORPS BASE, HI 96863

LUST **U003188511**
UST **N/A**

LUST:

Facility ID: 9-102122
Release ID: 000018
Facility Status Date: 2000-01-12 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Li

UST:

Facility ID: 9-102122
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-M-53
Installed: 12/1/1960
Tank Status: Permanently Out of Use
Date Closed: 9/4/1996
Tank Capacity: 2000
Substance: Diesel
Pipe Material: Not Listed
Pipe Other Material: Not reported
Pipe 2nd Construction: None

MAP FINDINGS

Map ID			EDR ID Number
Direction			
Distance			
Distance (ft.)	Site	Database(s)	EPA ID Number

2	USMC - KANEOHE MARINE CORPS BASE BLDG 504, TANK KB121 KANEOHE MARINE CORPS BASE, HI 96863	LUST UST	U003188522 N/A
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LUST:

Facility ID: 9-103214
 Release ID: 000016
 Facility Status Date: 1999-11-29 00:00:00
 Facility Status: Site Cleanup Completed
 Project Officer: Takaba

UST:

Facility ID: 9-103214
 Owner: U.S. MARINE CORPS BASE HAWAII
 Owner Address: Facilities Department Box 63002
 Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
 Tank ID: R-KB-121
 Installed: 1/1/1955
Tank Status: Permanently Out of Use
 Date Closed: 9/1/1997
 Tank Capacity: 1000
 Substance: Diesel
 Pipe Material: Bare Steel
 Pipe Other Material: Not reported
 Pipe 2nd Construction: None

2	USMC - KMCAS BLDG 247, TANK KB21 KANEOHE MARINE CORPS BASE, HI 96863	LUST UST	U003188508 N/A
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LUST:

Facility ID: 9-102105
 Release ID: 000019
 Facility Status Date: 2000-01-13 00:00:00
 Facility Status: Site Cleanup Completed
 Project Officer: Li

UST:

Facility ID: 9-102105
 Owner: U.S. MARINE CORPS BASE HAWAII
 Owner Address: Facilities Department Box 63002
 Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
 Tank ID: R-KB-21
 Installed: 5/2/1974
Tank Status: Permanently Out of Use
 Date Closed: 7/1/1997
 Tank Capacity: 500
 Substance: Diesel
 Pipe Material: Bare Steel
 Pipe Other Material: Not reported
 Pipe 2nd Construction: None

MAP FINDINGS

Map ID			EDR ID Number
Direction			
Distance			
Distance (ft.)	Site	Database(s)	EPA ID Number

2	USMC - KMCAS BLDG 1361, TANKS KB68 / KB69 KANEOHE MARINE CORPS BASE, HI 96863	LUST UST	U003188513 N/A
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LUST:

Facility ID: 9-102133
 Release ID: 010001
 Facility Status Date: 2002-07-10 00:00:00
 Facility Status: Site Cleanup Completed
 Project Officer: Takaba

UST:

Facility ID: 9-102133
 Owner: U.S. MARINE CORPS BASE HAWAII
 Owner Address: Facilities Department Box 63002
 Owner City, St, Zip: Kaneohe Marine Corps Base, 96863 96863
 Tank ID: R-KB69
 Installed: 5/2/1985
Tank Status: Permanently Out of Use
 Date Closed: 4/1/1997
 Tank Capacity: 550
 Substance: Used Oil
 Pipe Material: Bare Steel
 Pipe Other Material: Not reported
 Pipe 2nd Construction: None

Facility ID: 9-102133
 Owner: U.S. MARINE CORPS BASE HAWAII
 Owner Address: Facilities Department Box 63002
 Owner City, St, Zip: Kaneohe Marine Corps Base, 96863 96863
 Tank ID: R-KB68
 Installed: 5/2/1971
Tank Status: Permanently Out of Use
 Date Closed: 4/1/1997
 Tank Capacity: 5000
 Substance: Diesel
 Pipe Material: Bare Steel
 Pipe Other Material: Not reported
 Pipe 2nd Construction: None

2	USMC - KMCAS BLDG 3014 TANK KB83 KANEOHE MARINE CORPS BASE, HI 96863	LUST UST	U001235749 N/A
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LUST:

Facility ID: 9-102143
 Release ID: 000026
 Facility Status Date: 1999-11-22 00:00:00
 Facility Status: Site Cleanup Completed
 Project Officer: Maniulit

UST:

Facility ID: 9-102143
 Owner: U.S. MARINE CORPS BASE HAWAII
 Owner Address: Facilities Department Box 63002
 Owner City, St, Zip: Kaneohe Marine Corps Base, 96863 96863
 Tank ID: R-KB83
 Installed: 1/1/1980
Tank Status: Permanently Out of Use

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235749

Date Closed: 2/5/1996
Tank Capacity: 550
Substance: Used Oil
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

USMC - KMCAS BLDG 566 TANK KB84 AND KB85 KANEHOE MARINE CORPS BASE, HI 96863

LUST U001235705
UST N/A

LUST:

Facility ID: 9-102097
Release ID: 000029
Facility Status Date: 2000-06-27 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Ruiz

UST:

Facility ID: 9-102097
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB84
Installed: 5/2/1944
Tank Status: Permanently Out of Use
Date Closed: 1/19/1995
Tank Capacity: 25000
Substance: Diesel
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102097
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB85
Installed: 5/2/1944
Tank Status: Permanently Out of Use
Date Closed: 1/19/1995
Tank Capacity: 25000
Substance: Diesel
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

2

USMC - KMCAS
BLDG 1178 KB50, KB51, KB52 AND KB 98
KANEOHE MARINE CORPS BASE, HI 96863

LUST **U001235729**
UST **N/A**

LUST:

Facility ID: 9-102121
Release ID: 950068
Facility Status Date: 1997-10-20 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Ruiz

Facility ID: 9-102121
Release ID: 000098
Facility Status Date: 2000-11-01 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Heu

UST:

Facility ID: 9-102121
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB98
Installed: 1/1/1986
Tank Status: Permanently Out of Use
Date Closed: 1/23/1996
Tank Capacity: 550
Substance: Used Oil
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102121
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB50
Installed: 5/2/1961
Tank Status: Permanently Out of Use
Date Closed: 3/6/1996
Tank Capacity: 10000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102121
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB51
Installed: 5/2/1961
Tank Status: Permanently Out of Use
Date Closed: 3/6/1996
Tank Capacity: 10000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235729

Facility ID: 9-102121
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB52
Installed: 1/1/1960
Tank Status: Permanently Out of Use
Date Closed: 1/17/1996
Tank Capacity: 550
Substance: Used Oil
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

**2 USMC - KANEOHE MARINE COPRS BASE
BLDG 1669, TANK KB97
KANEOHE MARINE CORPS BASE, HI 96863**

**LUST U003188519
UST N/A**

LUST:

Facility ID: 9-103210
Release ID: 000033
Facility Status Date: 1999-11-22 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Maniulit

UST:

Facility ID: 9-103210
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB-97
Installed: 1/1/1986
Tank Status: Permanently Out of Use
Date Closed: 11/1/1996
Tank Capacity: 550
Substance: Used Oil
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

**2 USMC - KMCAS
BLDG 1281 TANK KB58 KB59
KANEOHE MARINE CORPS BASE, HI 96863**

**LUST U001235734
UST N/A**

LUST:

Facility ID: 9-102126
Release ID: 950059
Facility Status Date: 1999-10-20 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Ung

UST:

Facility ID: 9-102126
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235734

Ownnder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-58
Installed: 5/2/1965
Tank Status: Permanently Out of Use
Date Closed: 9/1/1994
Tank Capacity: 6000
Substance: Gasoline
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102126
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownnder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-59
Installed: 5/2/1965
Tank Status: Permanently Out of Use
Date Closed: 9/1/1994
Tank Capacity: 6000
Substance: Gasoline
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

USMC - KMCAS BLDG 1184, TANKS KB54 / KB55 Kaneohe Marine Corps Base, HI 96863

LUST U003188512
UST N/A

LUST:

Facility ID: 9-102123
Release ID: 950072
Facility Status Date: 2001-12-21 00:00:00
Facility Status: LUST Cleanup Initiated: Petroleum
Project Officer: Li

UST:

Facility ID: 9-102123
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownnder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB-55
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 6/1/1997
Tank Capacity: 5000
Substance: Used Oil
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102123
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownnder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB54
Installed: 5/2/1942

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U003188512

Tank Status: Permanently Out of Use
Date Closed: 6/1/1997
Tank Capacity: 5000
Substance: Used Oil
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

USMC - KMCAS
BLDG 78 KB8 BLDG 127 KB 10 AND KB11
KANEOHE MARINE CORPS BASE, HI 96863

LUST U003154548
UST N/A

LUST:

Facility ID: 9-102096
Release ID: 950076
Facility Status Date: 1995-03-06 00:00:00
Facility Status: LUST Cleanup Initiated: Petroleum
Project Officer: Park

Facility ID: 9-102096
Release ID: 950052
Facility Status Date: 1995-03-10 00:00:00
Facility Status: LUST Cleanup Initiated: Petroleum
Project Officer: Park

UST:

Facility ID: 9-102096
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB11
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 3/6/1995
Tank Capacity: 2000
Substance: Diesel
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102096
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB10
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 2/28/1995
Tank Capacity: 2000
Substance: Gasoline
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102096
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U003154548

Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB8
Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 3/10/1995
Tank Capacity: 1500
Substance: Used Oil
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

**USMC - KMCAS
BLDG 1661 KB74
Kaneohe Marine Corps Base, HI 96863**

**LUST U001235744
UST N/A**

LUST:
Facility ID: 9-102138
Release ID: 000027
Facility Status Date: 1999-11-22 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Maniulit

UST:
Facility ID: 9-102138
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB74
Installed: 5/2/1985
Tank Status: Permanently Out of Use
Date Closed: 1/1/1997
Tank Capacity: 550
Substance: Used Oil
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

**USMC- KANEOHE MARINE CORPS BASE
BLDG 5009, TANK KB114
Kaneohe Marine Corps, HI 96863**

**LUST U003188521
N/A**

LUST:
Facility ID: 9-103212
Release ID: 950064
Facility Status Date: 1995-04-06 00:00:00
Facility Status: Case Transferred to HEER
Project Officer: HEER

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)

Site

Database(s)

EDR ID Number
EPA ID Number

2

USMC - KANEOHE MARINE CORPS BASE
BLDG 322, TANK KB100, TANK KB91
KANEOHE MARINE CORPS BASE, HI 96863

LUST
UST

U003188520
N/A

LUST:

Facility ID:

9-103211

Release ID:

990186

Facility Status Date:

1999-11-17 00:00:00

Facility Status:

LUST Cleanup Initiated: Petroleum

Project Officer:

Takaba

Facility ID:

9-103211

Release ID:

000030

Facility Status Date:

2002-07-10 00:00:00

Facility Status:

LUST Cleanup Initiated: Petroleum

Project Officer:

Takaba

UST:

Facility ID:

9-103211

Owner:

U.S. MARINE CORPS BASE HAWAII

Owner Address:

Facilities Department Box 63002

Ownder City,St,Zip:

Kaneohe Marine Corps Base, 96863 96863

Tank ID:

R-KB91

Installed:

5/2/1985

Tank Status:

Permanently Out of Use

Date Closed:

1/1/1997

Tank Capacity:

550

Substance:

Used Oil

Pipe Material:

Unknown

Pipe Other Material:

Not reported

Pipe 2nd Construction:

None

Facility ID:

9-103211

Owner:

U.S. MARINE CORPS BASE HAWAII

Owner Address:

Facilities Department Box 63002

Ownder City,St,Zip:

Kaneohe Marine Corps Base, 96863 96863

Tank ID:

R-KB-100

Installed:

1/1/1986

Tank Status:

Permanently Out of Use

Date Closed:

12/1/1997

Tank Capacity:

500

Substance:

Used Oil

Pipe Material:

Bare Steel

Pipe Other Material:

Not reported

Pipe 2nd Construction:

None

2

USMC - MARINE BASE CORPS HAWAII
BLDG 4079, TANK KB101
KANEOHE MARINE CORPS BASE, HI 96863

LUST
UST

U003154845
N/A

LUST:

Facility ID:

9-103041

Release ID:

950065

Facility Status Date:

1997-10-20 00:00:00

Facility Status:

Site Cleanup Completed

Project Officer:

Ichinotsubo

UST:

Facility ID:

9-103041

Map ID
Direction
Distance
Distance (ft.)Site

MAP FINDINGS

EDR ID Number

Database(s) EPA ID Number

USMC - MARINE BASE CORPS HAWAII (Continued)

U003154845

Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB101
Installed: 12/1/1987
Tank Status: Permanently Out of Use
Date Closed: 1/29/1996
Tank Capacity: 550
Substance: Used Oil
Pipe Material: Not Listed
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

**USMC - KMCAS
BLDG 207 TANK 17, 18, 19
KANEEOHE MARINE CORPS BASE, HI 96863**

**LUST U001235711
UST N/A**

LUST:

Facility ID: 9-102103
Release ID: 000020
Facility Status Date: 1997-02-13 00:00:00
Facility Status: LUST Cleanup Initiated: Petroleum
Project Officer: Li

UST:

Facility ID: 9-102103
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB-18
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 5/1/1995
Tank Capacity: 2300
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

**USMC - KMCAS
BLDG 1667, TANKS KB75, KB76, KB77, KB78 & KB79
KANEEOHE MARINE CORPS BASE, HI 96863**

**LUST U003188514
UST N/A**

LUST:

Facility ID: 9-102139
Release ID: 980082
Facility Status Date: 1998-04-01 00:00:00
Facility Status: LUST Cleanup Initiated: Petroleum
Project Officer: Park

Facility ID: 9-102139
Release ID: 000039
Facility Status Date: 1999-12-02 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Maniulit

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U003188514

UST:

Facility ID: 9-102139
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-78
Installed: 5/2/1968
Tank Status: Permanently Out of Use
Date Closed: 10/1/1998
Tank Capacity: 10000
Substance: Gasoline
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102139
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-76
Installed: 5/2/1968
Tank Status: Permanently Out of Use
Date Closed: 10/1/1998
Tank Capacity: 10000
Substance: Gasoline
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102139
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-77
Installed: 5/2/1968
Tank Status: Permanently Out of Use
Date Closed: 10/1/1998
Tank Capacity: 10000
Substance: Gasoline
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102139
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-75
Installed: 5/2/1968
Tank Status: Permanently Out of Use
Date Closed: 10/1/1998
Tank Capacity: 10000
Substance: Gasoline
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U003188514

Facility ID: 9-102139
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB-79
Installed: 5/2/1968
Tank Status: Permanently Out of Use
Date Closed: 7/1/1997
Tank Capacity: 550
Substance: Used Oil
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

**2 USMC - KANEOHE BAY MARINE BASE
BLDG 4041, TANK KB-4041-1
KANEOHE MARINE CORPS BASE, HI 96863**

**LUST U003188525
UST N/A**

LUST:
Facility ID: 9-103217
Release ID: 000040
Facility Status Date: 1999-12-02 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Maniulit

UST:
Facility ID: 9-103217
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB4041-1
Installed: 1/1/1987
Tank Status: Permanently Out of Use
Date Closed: 12/5/1996
Tank Capacity: 550
Substance: Used Oil
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

**2 USMC - KMCAS
BLDG 1091, TANKS KB45, KB46, KB47 & KB48
KANEOHE MARINE CORPS BASE, HI 96863**

**LUST U003188510
UST N/A**

LUST:
Facility ID: 9-102119
Release ID: 000021
Facility Status Date: 2000-01-13 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Li

UST:
Facility ID: 9-102119
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002

Map ID
Direction
Distance
Distance (ft.)Site

MAP FINDINGS

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U003188510

Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB45
Installed: 5/2/1956
Tank Status: Permanently Out of Use
Date Closed: 12/1/1996
Tank Capacity: 5000
Substance: Diesel
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102119
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB46
Installed: 5/2/1956
Tank Status: Permanently Out of Use
Date Closed: 12/1/1996
Tank Capacity: 5000
Substance: Diesel
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102119
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB47
Installed: 5/2/1956
Tank Status: Permanently Out of Use
Date Closed: 12/1/1996
Tank Capacity: 5000
Substance: Diesel
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

**USMC - MARINE BASE CORPS HAWAII
BLDG 105 TANK KB9
Kaneohe Marine Corps Base, HI 96863**

**LUST U003188507
UST N/A**

LUST:

Facility ID: 9-102098
Release ID: 000017
Facility Status Date: 1999-12-06 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Takaba

UST:

Facility ID: 9-102098
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: M-KB-9
Installed: 3/1/1997

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - MARINE BASE CORPS HAWAII (Continued)

U003188507

Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 600
Substance: Diesel
Pipe Material: Fiberglass Reinforced Plastic
Pipe Other Material: Not reported
Pipe 2nd Construction: Double-Walled

Facility ID: 9-102098
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB-9
Installed: 5/2/1949

Tank Status: **Permanently Out of Use**
Date Closed: 11/1/1997
Tank Capacity: 550
Substance: Diesel
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

USMC - KMCAS BLDG 373 TANK KB-6A, KB6B, KB6C, KB6D Kaneohe Marine Corps Base, HI 96863

LUST U001235703
UST N/A

LUST:
Facility ID: 9-102094
Release ID: 000025
Facility Status Date: 1999-10-12 00:00:00
Facility Status: LUST Cleanup Initiated: Petroleum
Project Officer: Park

UST:
Facility ID: 9-102094
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB-6C
Installed: Not reported

Tank Status: **Permanently Out of Use**
Date Closed: 5/1/1995
Tank Capacity: 3000
Substance: Gasoline
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102094
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB6A
Installed: Not reported

Tank Status: **Permanently Out of Use**
Date Closed: 5/1/1995
Tank Capacity: 3000

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235703

Substance: Gasoline
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102094
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB-6D
Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 5/1/1995
Tank Capacity: 1200
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102094
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB-6B
Installed: Not reported
Tank Status: Permanently Out of Use
Date Closed: 5/1/1995
Tank Capacity: 3000
Substance: Used Oil
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2 **USMC - KANEOHE MARINE CORP BASE
BLDG 322, TANK KB373-2
KANEOHE MARINE CORPS, HI 96863**

**LUST U003188524
N/A**

LUST:
Facility ID: 9-103216
Release ID: 960070
Facility Status Date: 2002-07-08 00:00:00
Facility Status: Case Transferred to HEER
Project Officer: HEER

2 **USMC - KMCAS
BLDG 1696 TANK KB82
KANEOHE MARINE CORPS BASE, HI 96863**

**LUST U001235748
UST N/A**

LUST:
Facility ID: 9-102142
Release ID: 000028
Facility Status Date: 1999-11-22 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Maniulit

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235748

UST:

Facility ID: 9-102142
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB82
Installed: 5/2/1984
Tank Status: Permanently Out of Use
Date Closed: 10/1/1997
Tank Capacity: 280
Substance: Diesel
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

USMC - KMCAS / BLDG 329 TANK KB329 A-V AND KB25, KB329-1 Kaneohe Marine Corps Base, HI 96863

LUST U001235716
UST N/A

LUST:

Facility ID: 9-102108
Release ID: 020023
Facility Status Date: 2004-09-09 00:00:00
Facility Status: Case Transferred to HEER
Project Officer: HEER

Facility ID: 9-102108
Release ID: 950067
Facility Status Date: 2004-09-09 00:00:00
Facility Status: Case Transferred to HEER
Project Officer: HEER

UST:

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329M
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329N
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235716

Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329B
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB-329-1
Installed: 1/1/1940
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 550
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329E
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329H
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235716

Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329F
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329L
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329D
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Gasoline
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329J
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235716

Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329K
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329C
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329P
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329Q
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235716

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329R
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329S
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329T
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owner City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329U
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235716

Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329V
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-25
Installed: 12/1/1941
Tank Status: Permanently Out of Use
Date Closed: 1/9/1997
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329G
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102108
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Owndr City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB329A
Installed: 5/2/1942
Tank Status: Permanently Out of Use
Date Closed: 4/1/1996
Tank Capacity: 25000
Substance: Other
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

MAP FINDINGS

Map ID			EDR ID Number
Direction			
Distance			
Distance (ft.)	Site	Database(s)	EPA ID Number

2	USMC - KMCAS BLDG 1282 KB62 KANEOHE MARINE CORPS BASE, HI 96863	LUST UST	U001235736 N/A
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LUST:

Facility ID:	9-102128
Release ID:	920116
Facility Status Date:	1998-03-11 00:00:00
Facility Status:	Site Cleanup Completed
Project Officer:	Ung

UST:

Facility ID:	9-102128
Owner:	U.S. MARINE CORPS BASE HAWAII
Owner Address:	Facilities Department Box 63002
Owner City,St,Zip:	Kaneohe Marine Corps Base, 96863 96863
Tank ID:	R-KB62
Installed:	5/2/1976
Tank Status:	Permanently Out of Use
Date Closed:	2/19/1992
Tank Capacity:	1200
Substance:	Used Oil
Pipe Material:	Not Listed
Pipe Other Material:	Not reported
Pipe 2nd Construction:	None

2	USMC - KMCAS BLDG 501 TANK KB38 KANEOHE MARINE CORPS BASE, HI 96863	LUST UST	U001235722 N/A
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LUST:

Facility ID:	9-102114
Release ID:	980093
Facility Status Date:	1999-11-26 00:00:00
Facility Status:	Site Cleanup Completed
Project Officer:	Hodges

UST:

Facility ID:	9-102114
Owner:	U.S. MARINE CORPS BASE HAWAII
Owner Address:	Facilities Department Box 63002
Owner City,St,Zip:	Kaneohe Marine Corps Base, 96863 96863
Tank ID:	R-KB38
Installed:	5/2/1972
Tank Status:	Permanently Out of Use
Date Closed:	11/1/1997
Tank Capacity:	550
Substance:	Diesel
Pipe Material:	Bare Steel
Pipe Other Material:	Not reported
Pipe 2nd Construction:	None

MAP FINDINGS

Map ID			EDR ID Number
Direction			
Distance			
Distance (ft.)	Site	Database(s)	EPA ID Number

2	USMC - KMCAS BLDG 1172 TANK KB49 KANEOHE MARINE CORPS BASE, HI 96863	LUST UST	U001235728 N/A
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LUST:

Facility ID:	9-102120
Release ID:	990234
Facility Status Date:	2004-03-22 00:00:00
Facility Status:	Site Cleanup Completed
Project Officer:	Takaba

UST:

Facility ID:	9-102120
Owner:	U.S. MARINE CORPS BASE HAWAII
Owner Address:	Facilities Department Box 63002
Owner City,St,Zip:	Kaneohe Marine Corps Base, 96863 96863
Tank ID:	R-KB-49
Installed:	Not reported
Tank Status:	Permanently Out of Use
Date Closed:	7/1/1997
Tank Capacity:	210000
Substance:	Other
Pipe Material:	Unknown
Pipe Other Material:	Not reported
Pipe 2nd Construction:	None

2	USMC - KMCAS BLDG 1284 TANK 65 KANEOHE MARINE CORPS BASE, HI 96863	LUST UST	U001235738 N/A
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LUST:

Facility ID:	9-102130
Release ID:	010038
Facility Status Date:	2005-08-12 00:00:00
Facility Status:	Site Cleanup Completed
Project Officer:	Pritchard

UST:

Facility ID:	9-102130
Owner:	U.S. MARINE CORPS BASE HAWAII
Owner Address:	Facilities Department Box 63002
Owner City,St,Zip:	Kaneohe Marine Corps Base, 96863 96863
Tank ID:	R-65
Installed:	Not reported
Tank Status:	Permanently Out of Use
Date Closed:	12/1/1995
Tank Capacity:	550
Substance:	Other
Pipe Material:	Unknown
Pipe Other Material:	Not reported
Pipe 2nd Construction:	None

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number
Database(s)
EPA ID Number

2 USMC - KMCAS BLDG 171, TANK KB2, KB3, KB4, KB5 KANEOHE MARINE CORPS BASE, HI 96863

LUST UST U001235702 N/A

LUST:

Facility ID: 9-102093
Release ID: 950069
Facility Status Date: 1999-12-09 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Ruiz

UST:

Facility ID: 9-102093
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB2
Installed: 5/2/1945
Tank Status: Permanently Out of Use
Date Closed: 3/7/1997
Tank Capacity: 50000
Substance: Diesel
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102093
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB4
Installed: 5/3/1945
Tank Status: Permanently Out of Use
Date Closed: 3/7/1995
Tank Capacity: 50000
Substance: Diesel
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102093
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB5
Installed: 5/3/1945
Tank Status: Permanently Out of Use
Date Closed: 3/7/1997
Tank Capacity: 50000
Substance: Diesel
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102093
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB3

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

USMC - KMCAS (Continued)

U001235702

Installed: 5/3/1945
Tank Status: **Permanently Out of Use**
Date Closed: 3/7/1995
Tank Capacity: 50000
Substance: Diesel
Pipe Material: Unknown
Pipe Other Material: Not reported
Pipe 2nd Construction: None

2

USMC - KMCAS BLDG 385 KB27 & KB28 Kaneohe Marine Corps Base, HI 96863

LUST U001235717
UST N/A

LUST:

Facility ID: 9-102109
Release ID: 990116
Facility Status Date: 2000-06-20 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Li

UST:

Facility ID: 9-102109
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB 27
Installed: 5/2/1942
Tank Status: **Permanently Out of Use**
Date Closed: 1/7/1999
Tank Capacity: 25000
Substance: Gasoline
Pipe Material: Galvanized Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102109
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB 28
Installed: 5/2/1943
Tank Status: **Permanently Out of Use**
Date Closed: 1/7/1999
Tank Capacity: 25000
Substance: Diesel
Pipe Material: Galvanized Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)Site

EDR ID Number

Database(s) EPA ID Number

2 USMC - KMCAS
BLDG 132 TANK KB13, KB14, KB15
KANEEOHE MARINE CORPS BASE, HI 96863

LUST U001235709
UST N/A

LUST:

Facility ID: 9-102101
Release ID: 000022
Facility Status Date: 1999-11-26 00:00:00
Facility Status: Site Cleanup Completed
Project Officer: Ung

UST:

Facility ID: 9-102101
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB15
Installed: 5/2/1954
Tank Status: Permanently Out of Use
Date Closed: 1/11/1995
Tank Capacity: 550
Substance: Used Oil
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102101
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB-14
Installed: 5/2/1954
Tank Status: Permanently Out of Use
Date Closed: 1/11/1995
Tank Capacity: 10000
Substance: Diesel
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

Facility ID: 9-102101
Owner: U.S. MARINE CORPS BASE HAWAII
Owner Address: Facilities Department Box 63002
Ownder City,St,Zip: Kaneohe Marine Corps Base, 96863 96863
Tank ID: R-KB13
Installed: 5/2/1954
Tank Status: Permanently Out of Use
Date Closed: 1/11/1995
Tank Capacity: 10000
Substance: Gasoline
Pipe Material: Bare Steel
Pipe Other Material: Not reported
Pipe 2nd Construction: None

MAP FINDINGS

Map ID			EDR ID Number
Direction			
Distance			
Distance (ft.)	Site	Database(s)	EPA ID Number

3	USMC - KMCAS TANK KB-565, RADAR RD ENVIRONMENTAL DIVISION P.O. KANEOHE MARINE CORPS, HI 96863	LUST	S103393750 N/A
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LUST:

Facility ID:	9-203384
Release ID:	980235
Facility Status Date:	1998-09-15 00:00:00
Facility Status:	Case Transferred to HEER
Project Officer:	HEER

4	USMC - KMCAS BLDG 454 TANK KB-32 / CUSHMAN AVE & MIDDLEDAUGH ST KANEOHE MARINE CORPS BASE, HI 96863	UST	U001235720 N/A
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UST:

Facility ID:	9-102112
Owner:	U.S. MARINE CORPS BASE HAWAII
Owner Address:	Facilities Department Box 63002
Owner City, St, Zip:	Kaneohe Marine Corps Base, 96863 96863
Tank ID:	R-KB32
Installed:	5/2/1984
Tank Status:	Permanently Out of Use
Date Closed:	9/1/1994
Tank Capacity:	550
Substance:	Used Oil
Pipe Material:	No Piping
Pipe Other Material:	Not reported
Pipe 2nd Construction:	None

5	USMC - MARINE CORPS BASE HAWAII 6TH AND C ST TANK KB-K17-1 KANEOHE MARINE CORPS BASE, HI 96863	UST	U003402912 N/A
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UST:

Facility ID:	9-203434
Owner:	U.S. MARINE CORPS BASE HAWAII
Owner Address:	Facilities Department Box 63002
Owner City, St, Zip:	Kaneohe Marine Corps Base, 96863 96863
Tank ID:	R-KB-17-1
Installed:	Not reported
Tank Status:	Permanently Out of Use
Date Closed:	8/1/1998
Tank Capacity:	250
Substance:	Diesel
Pipe Material:	Not Listed
Pipe Other Material:	Not reported
Pipe 2nd Construction:	None

MAP FINDINGS

Map ID			EDR ID Number
Direction			
Distance			
Distance (ft.)	Site	Database(s)	EPA ID Number

5	USMC - MARINE CORPS BASE HAWAII 6TH / C ST TANK KB-K17-1 KANEOHE MARINE CORPS, HI 96863	LUST	S103455032 N/A
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LUST:

Facility ID:	9-203434
Release ID:	980230
Facility Status Date:	1999-11-19 00:00:00
Facility Status:	Site Cleanup Completed
Project Officer:	Ung

6	USMC - MARINE CORPS BASE HAWAII BLDG 256 - 3RD ST TANK 256 KANEOHE MARINE CORPS, HI 96863	LUST	S103455187 N/A
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LUST:

Facility ID:	9-103404
Release ID:	980232
Facility Status Date:	1998-09-04 00:00:00
Facility Status:	Case Transferred to HEER
Project Officer:	HEER

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
HONOLULU COUNTY	S103763651	KMCAS LANDFILL	KANEOHE BAY		SWF/LF
KAILUA	U003221964	KAPAA QUARRY MAINTENANCE YARD	(KAPAA QUARRY RD) 115 KALANIANA'OLE HWY	96734	UST
KAILUA	1004689024	HAWAII YOUTH CORRECTIONAL FACILITY	42 KALANIANA'OLE HWY	96734	RCRA-SQG, FINDS
KAILUA	1006820819	KAILUA CORPORATION YARD	42-377 KALANIANA'OLE HWY	96734	SHWS, FINDS, SPILLS
KAILUA	U003541813	KAILUA CORPORATION YARD	42-377 KALANIANA'OLE HWY	96734	LUST, UST
KAILUA	S106815555	44-637 KANEOHE BAY DRIVE, SEWER	44-637 KANEOHE BAY DR	96734	SPILLS
KAILUA	1006819296	KAWAINUI MARSH	KAPAA QUARRY RD	96734	SHWS, FINDS, SPILLS
KAILUA	U003222015	AMERON KPAQ QUARRY	KAPAA QUARRY 909 KALANIANA'OLE HWY	96734	UST
KAILUA	1000143738	KAPAA LDFL	OFF OLD QUARRY RD	96734	CERCLIS, FINDS
KAILUA	S106818199	KAPAA LANDFILL - KAPAA QUARRY ROAD	OLD KAPAA QUARRY RD	96734	SHWS
KANEOHE BAY	92290228	KANEOHE MC AIR STATION ISLAND OF OAHU	KANEOHE MC AIR STATION ISLAND OF OAHU	96863	ERNS
KANEOHE BAY MARINE CORP	1006820104	BILGE SLOPS, WHISKEY I, KANEOHE MCBH	KANEOHE BAY MARINE CORPS AIR STATION	96863	FINDS
KANEOHE MARINE CORP	S104241264	USMC - MARINE CORPS BASE HAWAII	BLDG 184 / 185 TANK KB 184	96863	LUST
KANEOHE MARINE CORP	U003711770	USMC - MARINE CORPS BASE HAWAII	BLDG 3097 TANK KB95	96863	LUST, UST
KANEOHE MARINE CORP	U003402862	USMC - MCBH KANEOHE BAY	BLDG 505 KB-6081	96863	SHWS, LUST, UST
KANEOHE MARINE CORP	U003346406	USMC- MARINE BASE CORPS HAWAII	BLDG 6003 TANK KB127	96863	UST
KANEOHE MARINE CORP	U003221926	USMC - MARINE BASE CORPS HAWAII	BLDG 4042 TANK KB 4042	96863	LUST, UST
KANEOHE MARINE CORP	U003221925	USMC - MARINE CORPS BASE HAWAII	BLDG 184 AND 185 TANK KB 184	96863	UST
KANEOHE MARINE CORP	U003221888	USMC - KANEOHE MARINE CORPS BASE	BLDG 5032, TANK KB118	96863	UST
KANEOHE MARINE CORP	1006844255	USMC - MCBH KANEOHE BAY	KANEOHE BAY MARINE CORPS AIR STATION	96863	FINDS
KANEOHE MARINE CORP	1006844221	USMC- KANEOHE MARINE CORP BASE	KANEOHE BAY MARINE CORPS AIR STATION	96863	FINDS
KANEOHE MARINE CORP	1006843486	USMC- MARINE BASE CORPS HAWAII	KANEOHE BAY MARINE CORPS AIR STATION	96863	FINDS
KANEOHE MARINE CORP	1006843484	USMC - MARINE CORP BASE HAWAII	KANEOHE BAY MARINE CORPS AIR STATION	96863	FINDS
KANEOHE MARINE CORP	1006843483	USMC- MARINE BASE CORPS HAWAII	KANEOHE BAY MARINE CORPS AIR STATION	96863	FINDS
KANEOHE MARINE CORP	1006843445	USMC - MARINE BASE CORPS HAWAII	KANEOHE BAY MARINE CORPS AIR STATION	96863	FINDS
KANEOHE MARINE CORP	1006843427	USMC - KANEOHE BAY MARINE BASE	KANEOHE BAY MARINE CORPS AIR STATION	96863	FINDS
KANEOHE MARINE CORP	1006843426	USMC - KANEOHE MARINE CORP BASE	KANEOHE BAY MARINE CORPS AIR STATION	96863	FINDS
KANEOHE MARINE CORP	1006841924	USMC - MARINE BASE CORPS HAWAII	KANEOHE BAY MARINE CORPS AIR STATION	96863	FINDS
KANEOHE MARINE CORP	1006819000	MCBH KANEOHE BAY OILY WATER SPILL	KANEOHE MARINE CORPS BASE	96863	FINDS
KANEOHE MARINE CORP	1006818998	MCBH KANEOHE BAY RELEASE FROM AN UNREGULATED TANK KB-49	KANEOHE MARINE CORPS BASE	96863	FINDS
KANEOHE MARINE CORP	1006818997	MCBH KANEOHE HEATING OIL TANK KB-39 DIESEL LEAK	KANEOHE MARINE CORPS BASE	96863	FINDS
KANEOHE MARINE CORP	1006818996	MCBH KANEOHE HEATING OIL TANK KB-80 DIESEL LEAK	KANEOHE MARINE CORPS BASE	96863	FINDS
KANEOHE MARINE CORP	1006818995	MCBH KANEOHE HEATING OIL TANK KB-89 DIESEL LEAK	KANEOHE MARINE CORPS BASE	96863	FINDS
KANEOHE MARINE CORP	1006818994	MCBH KANEOHE, UST KB-73	KANEOHE MARINE CORPS BASE	96863	FINDS
KANEOHE MARINE CORP	1006818990	MCBH KANEOHE BAY DIESEL LEAK	KANEOHE MARINE CORPS BASE	96863	FINDS
KANEOHE MARINE CORP	U003155042	USMC - MARINE CORPS BASE HAWAII	MAINTENANCE FACILITY / BLDG 3094 TANK 93	96863	UST
KANEOHE MARINE CORP	1006873928	US MARINE CORPS	MARINE CORPS BASE	96863	FINDS
KANEOHE MARINE CORP	1006820810	KANEOHE MARINE CORPS HAWAII	MARINE CORPS BASE	96863	FINDS
KAPAA, OAHU	S106100527	KAPAA LANDFILL	KAPAA QUARRY ROAD	96734	SWF/LF

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
M C B H KANEOHE BAY	1006844310	USMC - MARINE CORPS BASE HAWAII	3RD ST - BLDG 256, TANK 256	96863	FINDS
M C B H KANEOHE BAY	1006843826	USMC - MARINE BASE CORPS HAWAII	BLDG 4079, TANK KB101	96863	FINDS
M C B H KANEOHE BAY	1006843644	USMC - MARINE CORPS BASE HAWAII	BLDG 3097, TANK KB95	96863	FINDS
M C B H KANEOHE BAY	1006843477	USMC MARINE BASE CORPS HAWAII	BLDG 4042, TANK KB4042	96863	FINDS
M C B H KANEOHE BAY	1006843096	USMC MARINE CORPS BASE HAWAII	BUILDING 3094 TANK 93 MAINTENANCE FACILITY	96863	FINDS
MCBH KANEOHE BAY	1006816370	U.S. MARINE CORPS BASE HAWAII	MARINE CORPS BASE HAWAII MOKAPU RD BUILDING 1360	96863	TRIS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

FEDERAL RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 09/27/2006	Source: EPA
Date Data Arrived at EDR: 11/01/2006	Telephone: N/A
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 11/01/2006
Number of Days to Update: 21	Next Scheduled EDR Contact: 01/29/2007
	Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

Date of Government Version: 09/27/2006	Source: EPA
Date Data Arrived at EDR: 11/01/2006	Telephone: N/A
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 11/01/2006
Number of Days to Update: 21	Next Scheduled EDR Contact: 01/29/2007
	Data Release Frequency: Quarterly

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 09/27/2006	Source: EPA
Date Data Arrived at EDR: 11/01/2006	Telephone: N/A
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 11/01/2006
Number of Days to Update: 21	Next Scheduled EDR Contact: 01/29/2007
	Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NPL RECOVERY: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991

Source: EPA

Date Data Arrived at EDR: 02/02/1994

Telephone: 202-564-4267

Date Made Active in Reports: 03/30/1994

Last EDR Contact: 11/17/2006

Number of Days to Update: 56

Next Scheduled EDR Contact: 02/19/2007

Data Release Frequency: No Update Planned

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 08/09/2006

Source: EPA

Date Data Arrived at EDR: 09/21/2006

Telephone: 703-603-8960

Date Made Active in Reports: 11/22/2006

Last EDR Contact: 12/19/2006

Number of Days to Update: 62

Next Scheduled EDR Contact: 03/19/2007

Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 10/10/2006

Source: EPA

Date Data Arrived at EDR: 10/25/2006

Telephone: 703-603-8960

Date Made Active in Reports: 11/22/2006

Last EDR Contact: 12/18/2006

Number of Days to Update: 28

Next Scheduled EDR Contact: 03/19/2007

Data Release Frequency: Quarterly

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 09/27/2006

Source: EPA

Date Data Arrived at EDR: 10/11/2006

Telephone: 800-424-9346

Date Made Active in Reports: 12/13/2006

Last EDR Contact: 12/04/2006

Number of Days to Update: 63

Next Scheduled EDR Contact: 03/05/2007

Data Release Frequency: Quarterly

RCRA: Resource Conservation and Recovery Act Information

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/13/2006	Source: EPA
Date Data Arrived at EDR: 06/28/2006	Telephone: 800-424-9346
Date Made Active in Reports: 08/23/2006	Last EDR Contact: 12/13/2006
Number of Days to Update: 56	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2005	Source: National Response Center, United States Coast Guard
Date Data Arrived at EDR: 01/12/2006	Telephone: 202-260-2342
Date Made Active in Reports: 02/21/2006	Last EDR Contact: 10/24/2006
Number of Days to Update: 40	Next Scheduled EDR Contact: 01/22/2007
	Data Release Frequency: Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 08/01/2006	Source: U.S. Department of Transportation
Date Data Arrived at EDR: 10/18/2006	Telephone: 202-366-4555
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 10/18/2006
Number of Days to Update: 35	Next Scheduled EDR Contact: 01/15/2007
	Data Release Frequency: Annually

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 03/21/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2006	Telephone: 703-603-8905
Date Made Active in Reports: 05/22/2006	Last EDR Contact: 09/07/2006
Number of Days to Update: 56	Next Scheduled EDR Contact: 10/02/2006
	Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 03/21/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2006	Telephone: 703-603-8905
Date Made Active in Reports: 05/22/2006	Last EDR Contact: 09/07/2006
Number of Days to Update: 56	Next Scheduled EDR Contact: 10/02/2006
	Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2004	Source: USGS
Date Data Arrived at EDR: 02/08/2005	Telephone: 703-692-8801
Date Made Active in Reports: 08/04/2005	Last EDR Contact: 11/10/2006
Number of Days to Update: 177	Next Scheduled EDR Contact: 02/05/2007
	Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2005	Source: U.S. Army Corps of Engineers
Date Data Arrived at EDR: 09/20/2006	Telephone: 202-528-4285
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 09/18/2006
Number of Days to Update: 63	Next Scheduled EDR Contact: 01/01/2007
	Data Release Frequency: Varies

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 10/17/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 10/20/2006	Telephone: 202-566-2777
Date Made Active in Reports: 12/13/2006	Last EDR Contact: 12/11/2006
Number of Days to Update: 54	Next Scheduled EDR Contact: 03/12/2007
	Data Release Frequency: Semi-Annually

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/14/2004	Source: Department of Justice, Consent Decree Library
Date Data Arrived at EDR: 02/15/2005	Telephone: Varies
Date Made Active in Reports: 04/25/2005	Last EDR Contact: 11/17/2006
Number of Days to Update: 69	Next Scheduled EDR Contact: 01/22/2007
	Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/07/2006	Source: EPA
Date Data Arrived at EDR: 10/13/2006	Telephone: 703-416-0223
Date Made Active in Reports: 12/13/2006	Last EDR Contact: 10/02/2006
Number of Days to Update: 61	Next Scheduled EDR Contact: 01/01/2007
	Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 11/04/2005	Source: Department of Energy
Date Data Arrived at EDR: 11/28/2005	Telephone: 505-845-0011
Date Made Active in Reports: 01/30/2006	Last EDR Contact: 12/18/2006
Number of Days to Update: 63	Next Scheduled EDR Contact: 03/19/2007
	Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985	Source: Environmental Protection Agency
Date Data Arrived at EDR: 08/09/2004	Telephone: 800-424-9346
Date Made Active in Reports: 09/17/2004	Last EDR Contact: 06/09/2004
Number of Days to Update: 39	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2004	Source: EPA
Date Data Arrived at EDR: 06/22/2006	Telephone: 202-566-0250
Date Made Active in Reports: 08/23/2006	Last EDR Contact: 12/19/2006
Number of Days to Update: 62	Next Scheduled EDR Contact: 03/19/2007
	Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002	Source: EPA
Date Data Arrived at EDR: 04/14/2006	Telephone: 202-260-5521
Date Made Active in Reports: 05/30/2006	Last EDR Contact: 10/18/2006
Number of Days to Update: 46	Next Scheduled EDR Contact: 01/15/2007
	Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/19/2006	Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Date Data Arrived at EDR: 10/27/2006	Telephone: 202-566-1667
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 12/18/2006
Number of Days to Update: 26	Next Scheduled EDR Contact: 03/19/2007
	Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

Date of Government Version: 10/19/2006	Source: EPA
Date Data Arrived at EDR: 10/27/2006	Telephone: 202-566-1667
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 12/18/2006
Number of Days to Update: 26	Next Scheduled EDR Contact: 03/19/2007
	Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2004	Source: EPA
Date Data Arrived at EDR: 05/11/2006	Telephone: 202-564-4203
Date Made Active in Reports: 05/22/2006	Last EDR Contact: 11/07/2006
Number of Days to Update: 11	Next Scheduled EDR Contact: 01/15/2007
	Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 02/13/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 04/21/2006	Telephone: 202-564-5088
Date Made Active in Reports: 05/11/2006	Last EDR Contact: 07/17/2006
Number of Days to Update: 20	Next Scheduled EDR Contact: 10/16/2006
	Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 07/07/2006	Source: EPA
Date Data Arrived at EDR: 08/09/2006	Telephone: 202-566-0500
Date Made Active in Reports: 09/06/2006	Last EDR Contact: 11/29/2006
Number of Days to Update: 28	Next Scheduled EDR Contact: 02/05/2007
	Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/19/2006	Source: Nuclear Regulatory Commission
Date Data Arrived at EDR: 10/31/2006	Telephone: 301-415-7169
Date Made Active in Reports: 12/13/2006	Last EDR Contact: 10/02/2006
Number of Days to Update: 43	Next Scheduled EDR Contact: 01/01/2007
	Data Release Frequency: Quarterly

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/09/2006	Source: Department of Labor, Mine Safety and Health Administration
Date Data Arrived at EDR: 09/27/2006	Telephone: 303-231-5959
Date Made Active in Reports: 11/27/2006	Last EDR Contact: 09/27/2006
Number of Days to Update: 61	Next Scheduled EDR Contact: 12/25/2006
	Data Release Frequency: Semi-Annually

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 10/11/2006
Date Data Arrived at EDR: 10/18/2006
Date Made Active in Reports: 12/13/2006
Number of Days to Update: 56

Source: EPA
Telephone: N/A
Last EDR Contact: 10/02/2006
Next Scheduled EDR Contact: 01/01/2007
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 12/04/2006
Next Scheduled EDR Contact: 03/05/2007
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2003
Date Data Arrived at EDR: 06/17/2005
Date Made Active in Reports: 08/04/2005
Number of Days to Update: 48

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/15/2006
Next Scheduled EDR Contact: 03/12/2007
Data Release Frequency: Biennially

STATE AND LOCAL RECORDS

SHWS: Sites List

Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 07/24/2006
Date Data Arrived at EDR: 07/27/2006
Date Made Active in Reports: 08/30/2006
Number of Days to Update: 34

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 09/22/2006
Next Scheduled EDR Contact: 12/18/2006
Data Release Frequency: Semi-Annually

SWF/LF: Permitted Landfills in the State of Hawaii

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/19/2004
Date Data Arrived at EDR: 05/20/2004
Date Made Active in Reports: 06/22/2004
Number of Days to Update: 33

Source: Department of Health
Telephone: 808-586-4245
Last EDR Contact: 10/24/2006
Next Scheduled EDR Contact: 01/22/2007
Data Release Frequency: Varies

LUST: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 08/11/2006
Date Data Arrived at EDR: 08/14/2006
Date Made Active in Reports: 08/30/2006
Number of Days to Update: 16

Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 09/26/2006
Next Scheduled EDR Contact: 12/25/2006
Data Release Frequency: Semi-Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Underground Storage Tank Database

Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 08/11/2006
Date Data Arrived at EDR: 08/14/2006
Date Made Active in Reports: 09/20/2006
Number of Days to Update: 37

Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 09/26/2006
Next Scheduled EDR Contact: 12/25/2006
Data Release Frequency: Semi-Annually

SPILLS: Release Notifications

Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 07/24/2006
Date Data Arrived at EDR: 07/27/2006
Date Made Active in Reports: 08/30/2006
Number of Days to Update: 34

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 09/22/2006
Next Scheduled EDR Contact: 12/18/2006
Data Release Frequency: Varies

INST CONTROL: Sites with Institutional Controls

Voluntary Remediation Program and Brownfields sites with institutional controls in place.

Date of Government Version: 07/24/2006
Date Data Arrived at EDR: 07/27/2006
Date Made Active in Reports: 08/30/2006
Number of Days to Update: 34

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 09/22/2006
Next Scheduled EDR Contact: 12/18/2006
Data Release Frequency: Varies

VCP: Voluntary Response Program Sites

Date of Government Version: 07/24/2006
Date Data Arrived at EDR: 07/27/2006
Date Made Active in Reports: 08/30/2006
Number of Days to Update: 34

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 09/22/2006
Next Scheduled EDR Contact: 12/18/2006
Data Release Frequency: Varies

DRYCLEANERS: Permitted Drycleaner Facility Listing

A listing of permitted drycleaner facilities in the state.

Date of Government Version: 09/07/2006
Date Data Arrived at EDR: 09/08/2006
Date Made Active in Reports: 10/13/2006
Number of Days to Update: 35

Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 10/30/2006
Next Scheduled EDR Contact: 01/29/2007
Data Release Frequency: Varies

BROWNFIELDS: Brownfields Sites

Date of Government Version: 07/24/2006
Date Data Arrived at EDR: 07/27/2006
Date Made Active in Reports: 08/30/2006
Number of Days to Update: 34

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 09/22/2006
Next Scheduled EDR Contact: 12/18/2006
Data Release Frequency: Varies

AIRS: List of Permitted Facilities

A listing of permitted facilities in the state.

Date of Government Version: 09/07/2006
Date Data Arrived at EDR: 09/08/2006
Date Made Active in Reports: 10/13/2006
Number of Days to Update: 35

Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 10/30/2006
Next Scheduled EDR Contact: 01/29/2007
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

TRIBAL RECORDS

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2004	Source: USGS
Date Data Arrived at EDR: 02/08/2005	Telephone: 202-208-3710
Date Made Active in Reports: 08/04/2005	Last EDR Contact: 11/10/2006
Number of Days to Update: 177	Next Scheduled EDR Contact: 02/05/2007
	Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/07/2006	Source: EPA Region 1
Date Data Arrived at EDR: 09/08/2006	Telephone: 617-918-1313
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 61	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Minnesota, Mississippi and North Carolina.

Date of Government Version: 08/24/2006	Source: EPA Region 4
Date Data Arrived at EDR: 09/11/2006	Telephone: 404-562-8677
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 58	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Semi-Annually

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 01/04/2005	Source: EPA Region 6
Date Data Arrived at EDR: 01/21/2005	Telephone: 214-665-6597
Date Made Active in Reports: 02/28/2005	Last EDR Contact: 11/17/2006
Number of Days to Update: 38	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/30/2006	Source: EPA Region 8
Date Data Arrived at EDR: 09/06/2006	Telephone: 303-312-6271
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 63	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 09/11/2006	Source: EPA Region 10
Date Data Arrived at EDR: 09/11/2006	Telephone: 206-553-2857
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 58	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 09/06/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 10/04/2006	Telephone: 415-972-3372
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 35	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/06/2006	Source: EPA Region 7
Date Data Arrived at EDR: 10/04/2006	Telephone: 913-551-7003
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 35	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

Date of Government Version: 08/24/2006	Source: EPA Region 4
Date Data Arrived at EDR: 09/11/2006	Telephone: 404-562-9424
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 58	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Semi-Annually

INDIAN UST R9: Underground Storage Tanks on Indian Land

Date of Government Version: 09/06/2006	Source: EPA Region 9
Date Data Arrived at EDR: 10/04/2006	Telephone: 415-972-3368
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 35	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

Date of Government Version: 09/11/2006	Source: EPA Region 10
Date Data Arrived at EDR: 09/11/2006	Telephone: 206-553-2857
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 58	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land

Date of Government Version: 12/02/2004	Source: EPA Region 5
Date Data Arrived at EDR: 12/29/2004	Telephone: 312-886-6136
Date Made Active in Reports: 02/04/2005	Last EDR Contact: 11/17/2006
Number of Days to Update: 37	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

Date of Government Version: 08/30/2006	Source: EPA Region 8
Date Data Arrived at EDR: 09/06/2006	Telephone: 303-312-6137
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 63	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

INDIAN UST R6: Underground Storage Tanks on Indian Land

Date of Government Version: 08/28/2006	Source: EPA Region 6
Date Data Arrived at EDR: 08/29/2006	Telephone: 214-665-7591
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 71	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

A listing of underground storage tank locations on Indian Land.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 09/07/2006
Date Data Arrived at EDR: 09/08/2006
Date Made Active in Reports: 11/08/2006
Number of Days to Update: 61

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 11/17/2006
Next Scheduled EDR Contact: 02/19/2007
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

Date of Government Version: 09/06/2006
Date Data Arrived at EDR: 10/04/2006
Date Made Active in Reports: 11/08/2006
Number of Days to Update: 35

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 11/17/2006
Next Scheduled EDR Contact: 02/19/2007
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oil waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.
Telephone: 312-280-5991

The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000

A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes

Source: National Institutes of Health
Telephone: 301-594-6248

Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools

Source: National Center for Education Statistics
Telephone: 202-502-7300

The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Private Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on private school locations in the United States.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

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EDR® Environmental
Data Resources Inc

EDR Historical Topographic Map Report

**KANEOHE MARINE CORE BASE
KANEOHE MARINE CORE BASE
KAILUA, HI 96734**

Inquiry Number: 1817434.1

December 14, 2006

The Standard in Environmental Risk Management Information

440 Wheelers Farms Rd
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

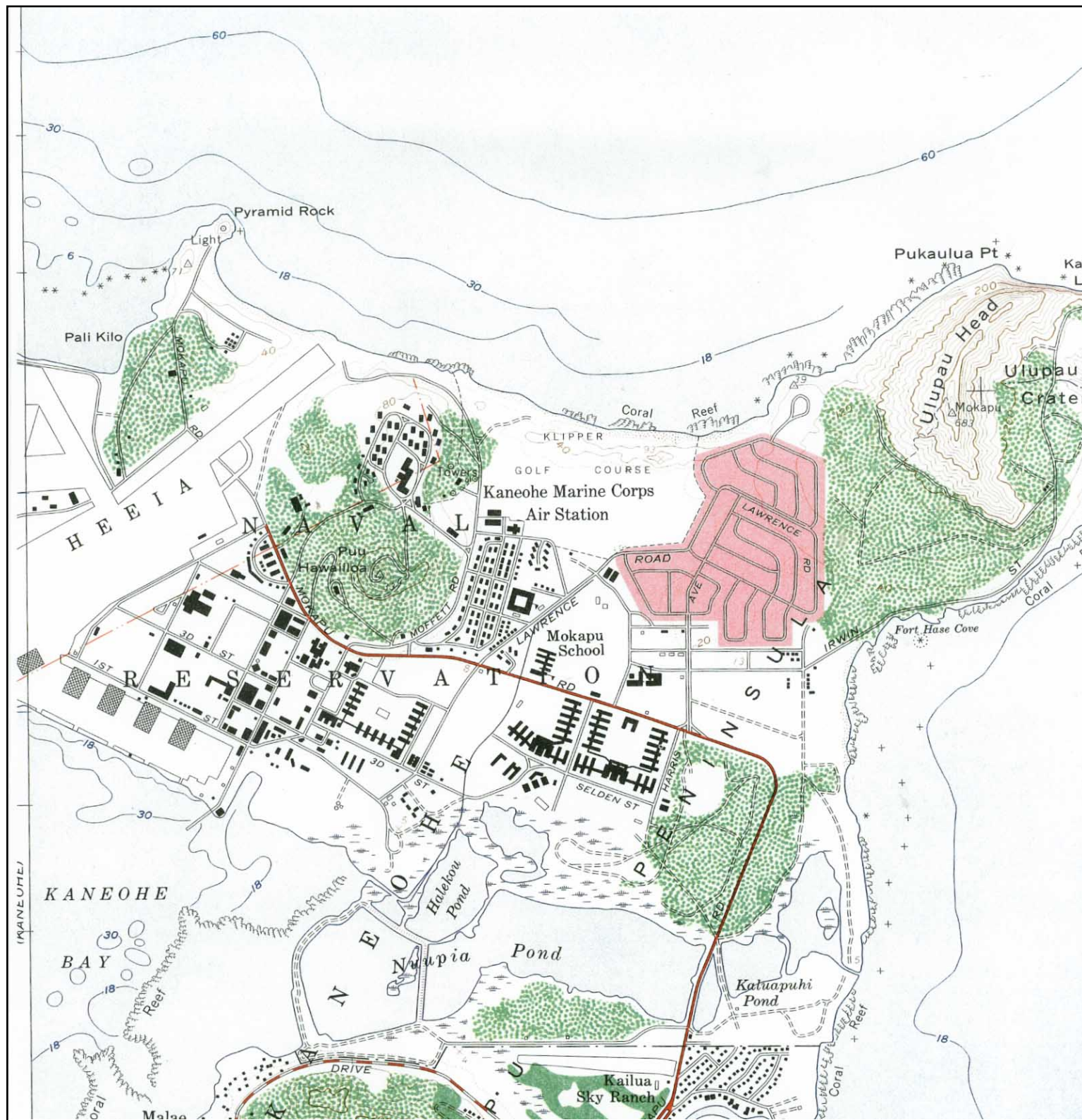
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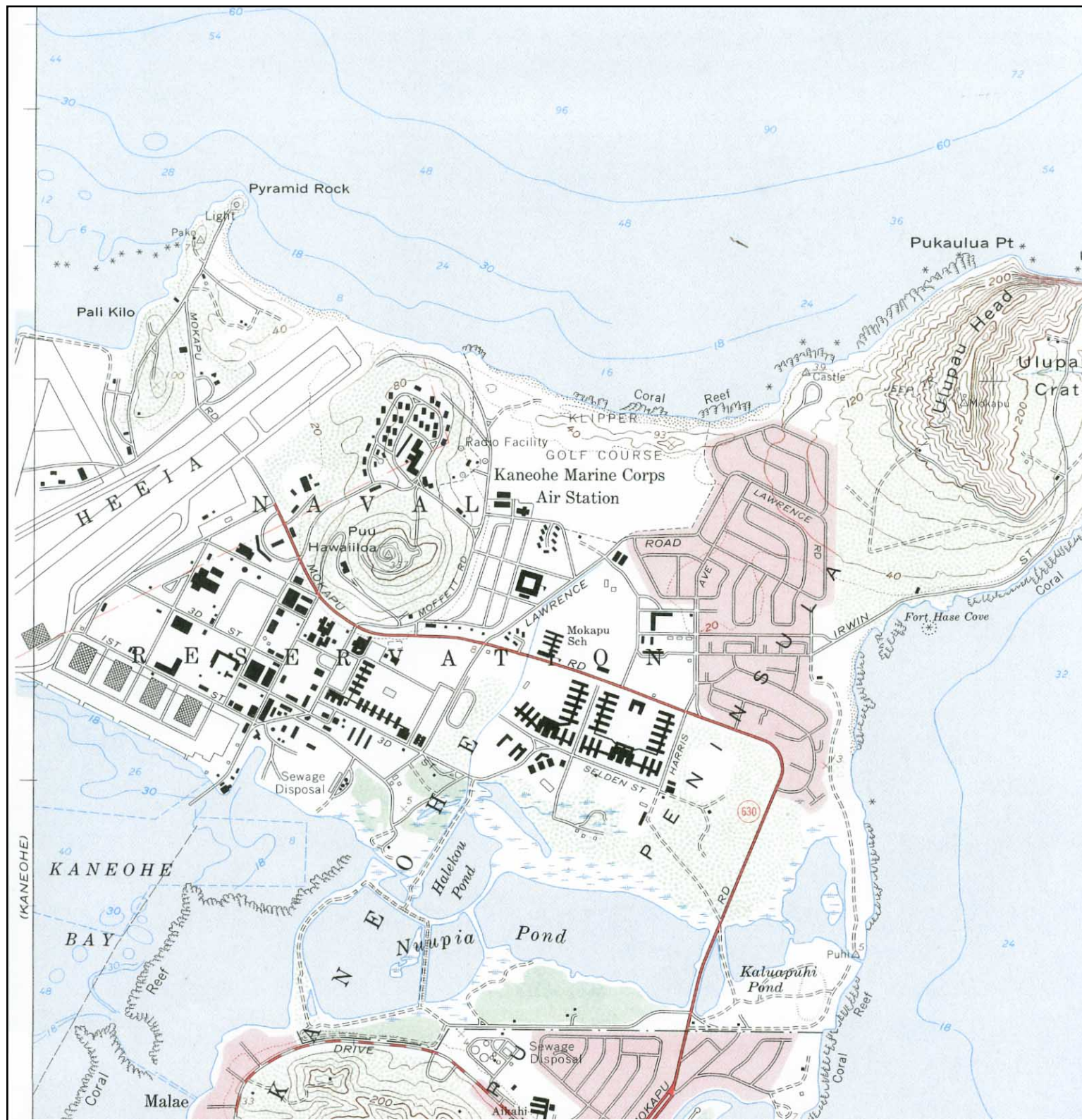
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Historical Topographic Map



<p>N ↑</p>	<p>TARGET QUAD NAME: Mokapu, HI MAP YEAR: 1959</p> <p>SERIES: 7.5 SCALE: 1:24,000</p>	<p>SITE NAME: KANEOHE MARINE CORE BASE ADDRESS: KANEOHE MARINE CORE BASE KAILUA, HI 96734</p> <p>LAT/LONG: /</p>	<p>CLIENT: Environmental Science Int'l CONTACT: TRAVIS HIRAMOTO INQUIRY#: 1817434.1 RESEARCH DATE: 12/14/2006</p>
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Historical Topographic Map



<p>N ↑</p>	<p>TARGET QUAD NAME: Mokapu, HI MAP YEAR: 1968</p> <p>SERIES: 7.5 SCALE: 1:24,000</p>	<p>SITE NAME: KANEOHE MARINE CORE BASE ADDRESS: KANEOHE MARINE CORE BASE KAILUA, HI 96734</p> <p>LAT/LONG: /</p>	<p>CLIENT: Environmental Science Int'l CONTACT: TRAVIS HIRAMOTO INQUIRY#: 1817434.1 RESEARCH DATE: 12/14/2006</p>
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Historical Topographic Map



<p>N ↑</p>	<p>TARGET QUAD NAME: Mokapu, HI MAP YEAR: 1983</p> <p>SERIES: 7.5 SCALE: 1:24,000</p>	<p>SITE NAME: KANEOHE MARINE CORE BASE ADDRESS: KANEOHE MARINE CORE BASE KAILUA, HI 96734</p> <p>LAT/LONG: /</p>	<p>CLIENT: Environmental Science Int'l CONTACT: TRAVIS HIRAMOTO INQUIRY#: 1817434.1 RESEARCH DATE: 12/14/2006</p>
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"Linking Technology with Tradition"®

Sanborn® Map Report

Ship To: (b) (6)
Environmental Science
56 Oneawa st
Kailua, HI 96734

Order Date: 12/13/2006 **Completion Date:** 12/15/2006

Inquiry #: 1817434.2s

P.O. #: NA

Site Name: KANEOHE MARINE CORE BASE

Address: KANEOHE MARINE CORE BASE

City/State: KAILUA, HI 96734

Cross Streets:

Customer Project: 106108
7014505BRU 808-261-0704

This document reports that the largest and most complete collection of Sanborn fire insurance maps has been reviewed based on client supplied information, and fire insurance maps depicting the target property at the specified address were not identified.

NO COVERAGE

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APPENDIX D

Records of Discussion

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Table D-1: Site Contacts

Name	Title	Telephone	Email address	Date of Interview	Comments
(b) (6)	MECPD, Environmental Compliance Inspector	(b) (6)	(b) (6)	18 April 2007	(b) (6) provided data for HM/HS/HW at MCBH.
(b) (6)	MECPD Pesticide POC.	(b) (6)	(b) (6)	11 April 2007	(b) (6) provided data for past use of pesticide/herbicide s.
(b) (6)	MCBH Family Housing Department, Housing Management POC	(b) (6)	(b) (6)	January – May 2007	(b) (6) provided data from Family Housing for housing and support areas.
(b) (6)	NAVFAC Hawaii, RPM	(b) (6)	(b) (6)	3 April 2007	(b) (6) provided data of the status of the transformer sites at MCBH.
(b) (6)	MECPD, Cultural Resources POC	(b) (6)	(b) (6)	23 April 2007	(b) (6) provided data for Cultural and Historical Resources.
(b) (6)	MECPD, Natural Resources POC	(b) (6)	(b) (6)	26 April 2007	(b) (6) provided the updated INRMP and data for landscaping requirements.
(b) (6)	MECPD, IR Program, PCB, asbestos, LBP POC	(b) (6)	(b) (6)	19 April 2007	(b) (6) provided data for the MCBH IR sites, MRP sites, asbestos, lead-based paint, and medical and biohazardous waste.
(b) (6)	MECPD, UST, AST, NPDES Permits POC	(b) (6)	(b) (6)	2 April 2007	(b) (6) provided data on stormwater, wastewater, and AUP issues.
(b) (6)	MCBH Pest Control POC	(b) (6)		12 April 2007	Provided data of pesticide use at MCBH and a list of the pesticides used in housing areas.

Table D-1: Site Contacts

Name	Title	Telephone	Email address	Date of Interview	Comments
(b) (6)	MCBH Environmental			18 April 2007	(b) (6) provided information on the satellite accumulation site for hazardous materials at Bldg 1505
(b) (6)	MECPD, ERP Project Manager	(b) (6)	(b) (6)	19 April 2007	(b) (6) provided data for spills.
(b) (6)	MCBH Family Housing Department, Building Maintenance Supervisor	(b) (6)	(b) (6)		(b) (6) provided information on housing maintenance.
(b) (6)	MECPD, Cultural Resource Management Specialist	(b) (6)		19 April 2007	(b) (6) provided the Draft EA for the ICRMP and Cultural Resources data for the four Support and the four Housing Areas.
(b) (6)	MECPD, Radon POC	(b) (6)	(b) (6)	2 April 2007	(b) (6) provided the Final Radon Report for MCBH.
(b) (6)	MCBH Family Housing, Engineering Department POC for CADD		(b) (6)		(b) (6) provided CADD files of MCBH housing and support facilities.
(b) (6)	MECPD, Natural Resources Wildlife Specialist	(b) (6)	(b) (6)	3 May 2007	(b) (6) provided literature of outdoor lighting technologies and policies for preventing seabird collisions with lights.

(b) (6) email correspondence.txt

From: (b) (6)
Sent: Friday, April 20, 2007 10:02 AM
To: (b) (6)
Subject: RE: Environmental condition of property for PPV neighborhoods and support areas.
Signed By: There are problems with the signature. Click the signature button for details.

Per our conversation when you were here, I am officially notifying you that MCBH has no transformer with PCB above 50 ppm. According to the EPA that is classified as non PCB. My department get annual reports from the Facilities Department informing us of all removal and replacements of all installed transformers on Kbay. All concern personnel are aware of the non PCB policies on this installation. We do not have any transformer on base that contain more then 50 ppm and we have documentation of all the required testing of these assigned transformers. Any piece of equipment that don't have non PCB on the data plate was tested by a certified laboratory. If you have any questions or concerns please feel free to call me or email me at anytime.
Thanks

(b) (6)
Environmental Compliance/Inspector
Ph. (b) (6)
Fax (b) (6)
DSN (b) (6) (b) (6)
Cell (b) (6)
email: (b) (6)

-----Original Message-----

From: (b) (6)]
Sent: Thursday, April 19, 2007 15:33
To: (b) (6)
Subject: Environmental condition of property for PPV neighborhoods and support areas.

(b) (6)

Thanks for taking the time to speak with me regarding hazardous materials and storage. During our conversation yesterday, you had mentioned emailing a summary of relative information such as a copy of your annual review or documentation of any know releases in the areas highlighted on the attached map. The neighborhoods we are interested in are the Hana Like, Mololani (formerly Capehart), Pa Honua Phase III, and Ulupau which are highlighted in yellow. The four support areas are highlighted in blue, buildings 1505, 4005, maintenance warehouse area and construction laydown area near Fort Hase Beach.

Al oha,

(b) (6)

Environmental Science International, Inc.

56 Oneawa Street, Suite 103

Kailua, HI 96734 (b) (6) email correspondence.txt

Ph: (b) (6)

Cell: (b) (6)



Telephone Interview Form

Date: 11-Apr-07

Time: 9:35am

Contract No.: N62742-06-D-1891 CTO: 0002 ESI Job No.: 106097

Project Title: ECP Option 1 and FOS to Support the MCBH Phase IV Housing PPV, Oahu, Hawaii

Conducted By: (b) (6)

Subject Property (SP): Mololani, Ulupau, Pa Honua Phase III, and Hana Like Neighborhoods, at KMCBH

Person Being Interviewed:

Name: (b) (6)

Title: MECPD

Address:

Phone/Email: 257-1225

Association with site: POC for Pesticides replacing (b) (6)

-
- 1) (b) (6) explained that he was new to this position and that very little documentation was available regarding past use of pesticides in KMCBH. He recommended speaking with (b) (6), the pesticides shop supervisor (b) (6). He also suggested contacting (b) (6), with housing management.

2)

(b) (6)

From: (b) (6)
Sent: Thursday, August 17, 2006 1:16 PM
To: (b) (6) Y CIV NAVFAC PAC '
Subject: FW: Storm Water - Units affected by excessive rain water

FYI

From: (b) (6)]
Sent: Thursday, August 17, 2006 1:00 PM
To: (b) (6)
Subject: RE: Storm Water - Units affected by excessive rain water

Hi (b) (6) :

The neighborhood for each address is listed below in blue ink. Thanks!

V/r,

(b) (6)

From: (b) (6)
Sent: Thursday, August 17, 2006 9:28
To: (b) (5)
Subject: RE: Storm Water - Units affected by excessive rain water
Importance: High

(b) (6)

Can you please tell me what neighborhoods the following units are in? I have added info on the ones that know of (see red text). However, the remaining units do not appear in any of my inventory lists

Thanks

(b) (6)

Water concerns due to 42 days of consecutive rain:

- 6372 - Hawaii Loa
- 2572 - Rainbow
- 2076 - Capehart
- 2070 - Capehart
- 2028 - Capehart
- 2030 - Capehart
- 2163 - Capehart
- 2178 - Capehart
- 2180 - Capehart
- 2212 - Capehart
- 1766 - Capehart
- 2524 - Rainbow
- 2503 - Rainbow

From: (b) (6)
Sent: Thursday, August 17, 2006 6:46 AM
To: (b) (6)
Subject: FW: Storm Water - Units affected by excessive rain water

(b) (6)
Can you tell what neighborhoods these belong to? If not, can you contact (b) (6) and make sure EBS includes this disclosure.
thanks
(b) (6)

From: (b) (6)
Sent: Tuesday, August 15, 2006 15:05
To: (b) (6)
Cc: (b) (6)
Subject: RE: Storm Water - Units affected by excessive rain water

(b) (6) I don't believe all these homes got into the EBS?

From: (b) (6)
Sent: Tuesday, August 15, 2006 14:56
To: (b) (6)
Cc: (b) (6)
Subject: Storm Water - Units affected by excessive rain water

H (b) (6)

Here's the listing of addresses affected by storm water:

Water concerns due to erosion and or swale maintenance issues:

- 2686 Uli St - Nani Ulupau
- 6280 Gier St - Hi Loa

Water concerns due to 42 days of consecutive rain:

- 6372
- 2572
- 2076
- 2070
- 2028
- 2030
- 2163
- 2178
- 2180
- 2212
- 1766
- 2524
- 2503

v/r,

(b)

(b) (6)

Housing Management Specialist

(b) (6)



Telephone Interview Form

Date: 3-Apr-07

Time: 14:00

Contract No.: N62742-06-D-1891 CTO: 0002 ESI Job No.: 106097

Project Title: ECP Option 1 and FOS to Support the MCBH Phase IV Housing PPV, Oahu, Hawaii

Conducted By: (b) (6)

Subject Property (SP): Capehart, Ulupau, Pa Honua Phase III, and Hana Like Neighborhoods, at KMCBH

Person Being Interviewed:

Name: (b) (6)

Title: MCBH Environmental

Address:

Phone/Email: (b) (6)

Association with site: IR Program Manager

-
- 1) Based on the conversation between (b) (6) and myself, the transformers sites still remain the same from the previous EBS conducted by Environet. New work at the sites are not planned to start until FY 12 (2012).

2)

(b) (6) email correspondence.txt
From: (b) (6)
Sent: Monday, April 23, 2007 10:15 AM
To: (b) (6)
Cc: (b) (6)
Subject: RE: Environmental Condition of Property interview conducted on 4/18/07
Signed By: There are problems with the signature. Click the signature button for details.

Hi (b) (6)

(b) (6) gave a digital copy (CD) of our draft ICRMP to (b) (6) (?) from your office last week Fri. Let us know if you need more info or if you want to sit down with (b) (6) and I regarding historic properties constraints for the next PPV phase.

Thanks, June

(b) (6)
CULTURAL RESOURCES MANAGER
Environmental Dept.
Marine Corps Base Hawaii
(b) (6)

-----Original Message-----

From: (b) (6)
Sent: Monday, April 23, 2007 8:42
To: (b) (6)
Subject: FW: Environmental Condition of Property interview conducted on 4/18/07

Hello (b) (6) -
You said that you might like to look at this request.

(b) (6)

-----Original Message-----

From: (b) (6)
Sent: Thursday, April 19, 2007 15:14
To: (b) (6)
Subject: Environmental Condition of Property interview conducted on 4/18/07

Hi (b) (6),

I spoke with you briefly yesterday and would like to follow up with sending you a site map indicating the areas of concern. The areas of concern are the PPV neighborhoods Hana Like, Mololani (formerly known as Capehart), Pa Honua Phase III, and Ulupau (highlighted in yellow). In addition, we have four support areas which are highlighted in blue. Please inform me of any relevant archeological, cultural or historical designations within or adjacent to our subject properties.

Thank you for taking the time to assist us. Should you have any questions or need to contact me I can be reached at (b) (6)

From: (b) (6)
Sent: Thursday, April 19, 2007 10:23 AM
To: (b) (6)
Cc: (b) (6)
Subject: Environmental Baseline Survey Phase 4
Aloha (b) (6) :

I'm working on the Environmental Baseline Survey (EBS) for the Phase 4 PPV for Military Housing and various associated housing support facilities.

The housing areas covered by the EBS include Mololani, Ulupau, Phase III of Pa Honua, and Hana Like. The support areas include Bldg 4005, Bldg 1505, maintenance office and warehouse areas near Bldg 1551 and the laydown area near Fort Hase Beach.

Relevant requirements of the INRMP/EA were included in previous EBS reports (ie, approval required prior to landscaping activities). As part of this EBS, we would like to determine if there have been any changes or additions to requirements in the INRMP/EA or the Master Landscaping Guidelines. I was wondering if it would be possible to stop by your office some time today or tomorrow to discuss these issues and/or get an electronic copy of above or any other relevant documents.

I appreciate any assistance you may be able to provide. Please feel free to call me if you have any questions.

Mahalo,

(b) (6)
Environmental Science International, Inc.
56 Oneawa Street, Suite 103
Kailua, Hawaii 96734
Office: (b) (6)
Cellular: (b) (6)
Fax: (b) (6)



Telephone Interview Form

Date: 4/19/2007

Contract No.: N62742-06-D-1891

CTO: 0002

ESI Job No.: 106097

Project Title: MCBH PPV Phase 4

Conducted By: (b) (6)

Subject Property (SP): Support areas (Bldg 1505, Bldg 4005, Maintenance Areas, Laydown Area)

Person Being Interviewed:

Name: (b) (6)

Title: Cultural Resources Manager

Address: _____

Phone/Email: _____

Association with site: _____

Stopped by to follow up on the E-mail I sent to (b) (6) for Natural Resources. She referred me to (b) (6)

She asked if (b) (6) was working on the same report. She showed me the Phase 4 Housing EA which is in Draft Form. I told her I would try to obtain a copy from our client. She showed me a map of the sensitivity zones, particularly by Mololani. Subsurface samples have been collected and indicate that dune sand extends in at least as far as indicated by the map, and may extend further inland. Bones are always an issue if any excavating is planned. Archeological monitoring will be required if any digging to take place????

From: [REDACTED]
Sent: Thursday, April 19, 2007 10:02 PM
To: (b) (6)
Cc: (b) (4)
Subject: MCBH PPV Phase 4 (EBS/FOS)
(b) (6):

I'm working on the EBS for the Phase 4 PPV for Military Housing and various associated housing support facilities.

The housing areas covered by the EBS include Mololani, Ulupau, Phase III of Pa Honua, and Hana Like. The support areas include Bldg 4005, Bldg 1505, and the Property Management Areas (maintenance office and warehouse areas near Bldg 1551 and the laydown area near Fort Hase Beach).

I would like to meet with you at your convenience to discuss Natural Resources ECP issues. Because an EBS was completed for many of the other housing areas at the Base, we are focusing on determining whether any new information or requirements exist related to Natural Resources (ie, changes in wetland boundaries, any new requirements for the Master Landscaping Guidance, any new developments related to the Marine Resources Study? Any new requirements or guidelines for down-ward shading lights?). If possible, I would also like to get an electronic copy of the INRMP and the Master Landscaping Guidance.

I am available next week between Tuesday and Thursday. Please let me know what time is convenient for you.

I look forward to meeting with you.

Mahalo,

(b) (6)
Environmental Science International, Inc.
56 Oneawa Street, Suite 103
Kailua, Hawaii 96734
Office: (b) (6)
Cellular: (b) (6)
Fax: (b) (6)



Interview Form

Date: 4/26/2007

Contract No.: N62742-06-D-1891

CTO: 0002

ESI Job No.: 106097

Project Title: MCBH PPV Phase 4

Conducted By: (b) (6)

Subject Property (SP): Housing Areas (Hana Like, Mololani, Pa Honua Phase 3, Ulupau)

Support areas (Bldg 1505, Bldg 4005, Maintenance Areas, Laydown Area)

Person Being Interviewed:

Name: (b) (6)

Title: Senior Natural Resources Management Specialist

Address:

Phone/Email: (b) (6)

Association with site:

Met with (b) (6) to determine if she was aware if anything new has developed related to natural resource issues or if any issues related to the new areas might apply. She informed me that the INRMP has been updated. The new version is formatted with the original text followed by the updates and also includes the full and updated versions of the appendices. New in the plan are updated regs/mandates in Appendix D requiring Landscaping Guidelines at all Installations. Also, in Appendix D is a more current list of preferred, allowed and prohibited plant species. (b) (6) pointed out that the Wiliwili tree is suspended as a preferred until the wasp issue is solved (she did mention that a treatment that prevents tree mortality is being evaluated.)

(b) (6) emphasized that the 2 most important issues that would apply to the PPV are the Landscaping guidelines and the Erosion BMPs. She stressed coordination with the Compliance department for all relevant activities. She also mentioned that the updated INRMP discusses erosion issues and basewide cumulative effects. She requested that the private contractor specifically address any change in the overall percent of unpaved surface when deconstructing/resconstructing buildings (ie ensure the runoff to the stormwater structures remains consistent or mitigate any anticipated changes).

(b) (6) continued to stress that the area around Nani Ulupau is of concern. Sediment from graded areas has entered stormwater structures which flow to areas of surface waters with coral reef habitats. She stated that although the specific area of concern is outside of the Phase 4 subject property that FCRMI should still be conscious of the issue and consider area-wide impacts.

Informed (b) (6) that FCRMI may be responsible for lighting. She did not have any updates but will provide electronic info on lights.

Pending: Erosion Study Results for Nani Ulupau area, Expanded boundaries of the Percolation Ditch Wetland, Any specific guidelines for Trees in addition INRMP Appendix D.

Gave Diane USB storage for the following documents

INRMP

Phase V EA for the ICRMP with Dianes comments

any info on downward lights

From: (b) (6)
Sent: Wednesday, April 18, 2007 11:07 AM
To: (b) (6)
Cc: (b) (6)
Subject: Environmental Baseline Survey Kaneohe MCBH Housing and Support Facilities (N62742-06-D-1891 CTO 0002)

Attachments: Fig2 Housing 071106.pdf; MCBH IR and MRP.pdf
Aloha (b) (6)

I'm working on the EBS for the Phase 4 PPV for Military Housing and various associated housing support facilities.

The housing areas covered by the EBS include Mololani, Ulupau, Phase III of Pa Honua, and Hana Like. The support areas (see attached, Fig 2 housing 071106) include Bldg 4005, Bldg 1505, the maintenance office and warehouse areas near Bldg 1551 and the laydown area near Fort Hase Beach.

I was wondering if you might be able to provide some information for several of the ECP categories including the Installation Restoration (IR) and Munitions Restoration (MR) program sites, Air Quality, Radioactive Waste, Medical/Biohazardous Wastes, and Landfills.

IR and MR program sites - As part of the EBS, we are conducting a review of the status of the IR and MR program sites. I have attached a figure and table (MCBH IR and MRP.pdf) which lists the sites and some information about site status. I'd like to confirm that the information is current for each of the IR sites (i.e., are there any investigations/studies that are not listed in the table?). Also, I was wondering if there is any available information for MR site A (small arms and malfunction range).

Air Quality – I would like to determine if there are any air permit reporting requirements for the housing areas or the support facilities (i.e., Is Family Housing Self Help required to submit any equipment or usage information for the yard maintenance equipment?).

Radioactive Wastes – Are you aware of any radioactive materials release or disposal sites on or near the housing or support areas?

Medical/Biohazardous Wastes – Do you know if there are any medical or biohazardous facilities on the base?

Landfills – Are there any active landfills other than Ulupau? Is there evidence of a release at the Ulupau Landfill?

New Releases – Are you aware of any other new releases that could impact the subject properties?

I appreciate any assistance you can provide. Please feel free to call me if you have any questions.

Mahalo,

(b) (6)
Environmental Science International, Inc.
56 Oneawa Street, Suite 103
Kailua, Hawaii 96734



Telephone Interview Form

Date: 4/19/2007

Contract No.: N62742-06-D-1891 CTO: 0002 ESI Job No.: 106097

Project Title: MCBH PPV Phase 4

Conducted By: (b) (6)

Subject Property (SP): Support areas (Bldg 1505, Bldg 4005, Maintenance Areas, Laydown Area)

Person Being Interviewed:

Name: (b) (6)

Title:

Address:

Phone/Email:

Association with site:

IR Sites - Confirmed with (b) (6) that the Table and figure from the RAB support meeting shows the current status of all IR sites.

MR Site - Small Arms and Malfunction Range - Discussed the site. (b) (6) informed me that the site was originally identified for the MRP in the ARARS. (b) (6) e-mailed relevant sections of that report while I waited. (b) (6) showed me the SI Work Plan (12/06) for the Small Arms and Malfunction Range and other MRP sites. (b) (6) explained that all firing was directed at the berm on the north end of the range and thus should not have affected any housing areas.

Air Quality - Inquired if there were any facilities he was aware of that required some type of reporting for air permits. He explained that the Base is currently undergoing review of the air permits. He listed the air emission sources he was aware of including: Bldg 1089 Chow Hall Boilers, Bldg 5069 Engine Test Facility. (b) (6) mentioned that during construction air permits would apply and relocation permits could be necessary.

Radioactive Wastes - Inquired if he knew of any facilities that might have radioactive materials. He inquired if I was referring to smoke alarms in hosing areas. I responded that we're looking more for facilities which store radioactive materials. (b) (6) referred to the Phase II EBS which indicates no radioactive wastes or releases.

Medical/Biohazardous Waste - inquired if (b) (6) was aware of any MW/BW on Base. He said at the Medical Clinic. Wastes are picked up periodically by a private contractor.

Landfills - Informed me that there are no landfills on base other than active Ulupau. Said there are no releases per say and that monitoring is now limited to detection monitoring as required for lower concentrations of target compounds.

New Releases - (b) (6) was not aware of any releases since the last EBS (Phase II). He suggested that I speak with (b) (6) (ERP program).



Interview Form

Date: 4/19/2007

Contract No.: N62742-06-D-1891

CTO: 0002

ESI Job No.: 106097

Project Title: MCBH PPV Phase 4

Conducted By: (b) (6)

Subject Property (SP): Housing Areas Pa Honua, Hana Like, Mololani, Ulupau), Support Areas Bldg 1505, Bldg 4005, Laydown Area, Maintenance Office/Warehouse Area

Person Being Interviewed:

Name: (b) (6)

Title/Dept: MCBH Environmental Compliance Department (USTs, ASTs, NPDES Permits)

Address: _____

Phone/Email: (b) (6)

Association with site: _____

4/19/07 Called and left a message.

4/20/2007 - Stopped by (b) (6) office. Inquired if there have been any developments in the last year related to AUP. (b) (6) provided a table of all UST/ASTs/POL drum sites. He said he was not aware of any spills in the last year but recommended that I confirm that with (b) (6). He also explained that there are currently only 5 USTs at MCBH Kaneohe Bay.



Telephone Interview Form

Date: 2-Apr-07

Time: 13:40

Contract No.: N62742-06-D-1891 **CTO:** 0002 **ESI Job No.:** 106097

Project Title: ECP Option 1 and FOS to Support the MCBH Phase IV Housing PPV, Oahu, Hawaii

Conducted By: (b) (6)

Subject Property (SP): Capehart, Ulupau, Pa Honua Phase III, and Hana Like Neighborhoods, at KMCBH

Person Being Interviewed:

Name: (b) (6)

Title: MCBH Environmental

Address:

Phone/Email: (b) (6)

Association with site: POC for USTs, stormwater and wastewater issues

1) Called and left message on 4/2/07

2) Called (b) (6) office on 4/13/07 @10:00 am - (b) (6) says he is more involved with wastewater treatment plant issues, recommended speaking with (b) (6) for wastewater distribution related information. The only wastewater release that he was aware of was near the clipper golf course area.

(b) (6) noted that he was aware of several stormwater issues in the Ulupau area and recommended coming into his office to take a look at his maps. Scheduled a meeting with him at his office at 10:30am .



Telephone Interview Form

Date: 12-Apr-07

Time: 10:25

Contract No.: N62742-06-D-1891 CTO: 0002 ESI Job No.: 106097

Project Title: ECP Option 1 and FOS to Support the MCBH Phase IV Housing PPV, Oahu, Hawaii

Conducted By: (b) (6)

Subject Property (SP): Capehart, Ulupau, Pa Honua Phase III, and Hana Like Neighborhoods, at KMCBH

Person Being Interviewed:

Name: (b) (6)

Title: MECPD

Address:

Phone/Email: (b) (6)

Association with site: Pesticides Shop Supervisor

- 1) 4/12/07 @ 10:25 am (b) (6) was not in the office at the time. Left message for him to contact me.

 - 2) On 4/12/07 @ 10:55am (b) (6) returned my call. I requested a list of pesticides currently used within the neighborhoods and asked how and where the pesticides are typically applied. (b) (6) said most of the pesticides in use are synthetic, and that he would put together a list and email it to me. The application of the pesticides very but most are sprayed around the perimeter of the buildings.
- I asked him if Chlorodane was used either in the past or present? (b) (6) said he has been there since 1981 and was not aware of any chlorodane use. He said that chlorodane may have been used prior to 1981, however no documentation was available.
- Inquired about pesticide use in the support areas and whether it was consistent with the housing areas? He said the support areas were part of the golf course maintenance and referred me to (b) (6).

HAZARDOUS CHEMICAL STORAGE INVENTORY - MONTHLY REPORT

Kaneohe Marine Corp Base Hawaii

Facilities Department - Work Center 76 (Pest Control)

PROCESS 4

Building 6522

CHEMICAL	MANUFACTURER	EPA REG NO	UNIT OF		Storage				
			ISSUE	Index	Location				
Advance Dual Choice	Whitmire Micro-gen	499-459	Bg (36 ea)	Bait	5				
Advance Dual Choice 360A	Whitmire Micro-gen	499-496	Pk (4 ea)	Bait					
Advance Granular Ant Bait	Whitmire Research Laboratories	499-370	Pl(6 lb)	Bait	25				
Altosid Briquets	Wellmark International	2724-375	Briquets (ea)	IGR	11				
Aquamaster	Monsanto	524-343	Jg(2.5gl)	Herb.	4				
Avert Roach Gel	Whitmire-Micro Gen	499-410	Resrvr (1.05oz)	Bait	3				
Baygon 2% Bait	Bayer Corporation	3125-121	Jg (5 lb)	Bait	9				
Bird Repellent-"4-the-Birds"	J.T. Eaton	1621-17-56	Cartridge	Other					
CB 40 Extra	Waterbury Companies, Inc.	9444-189	Cn	Aerosol	3				
CB 80 Extra	Waterbury Companies, Inc.	9444-175	Cn (17 oz)	Aerosol	4				
CB Invader HPX	Waterbury Companies, Inc.	9444-186	Cn	Aerosol	5				
CB Invader HPX 20	Waterbury Companies, Inc.	9444-204	Cn	Aerosol	5				
CB Stinger Wasp Spray	Waterbury Companies, Inc.	9444-181	Cn	Aerosol					
Clean Air Purge III	Waterbury Companies, Inc.	9444-158	Cn (6.4oz)	Aerosol					
DeltaGard G	Bayer Environmental Science	432-836	Bg (20 Lb)	Insecti	19/20				
DeltaGard T&O	AgrEvo	432-836-45639	Bg-(40 lb)	Insecti	19/20				
Demon WP	Zeneca Proffesional Products	10182-71	Lb	Insecti	18				
Demon WP	Sygenta	100-990	Lb	Insecti	18				
Drax Liquidator	Waterbury Companies	9444-206	Ea	Bait	24				
Drione	AgrEvo	4816-353	Lb	Insecti	15				
Excel 90 NF	Brewer		Gl	Other	21				
Garlon 3A	Dow Agro Science	62719-37	Jg (2.5 gl)	Herb.	2				
Gourmet Ant Bait Gel	Innovative Pest Control Products	73766-1	Bg (6 syringes)	Bait	8				
Krovar 1DF	Dupont	352-505	Bg (6 lb)	Herb.	5				
Maxforce FC Ant Bait Stations	Bayer Environmental Science	432-1256	Bg (24 ea)	Bait					
Maxforce Ant Bait Stations	Bayer Environmental Science	432-1252	Bg (24 ea)	Bait					
Maxforce Ant Bait Stations	Maxforce Insect Control	64248-2	Bg (24 ea)	Bait					
Maxforce Granular Fly Bait	Bayer Environmental Science	432-1375	Pl (5 Lb)	Bait	18				
Maxforce Insect Granules	Bayer Environmental Science	432-1255	Jg (6 Lb)	Bait	10				
Maxforce Roach Bait Stations	Bayer Environmental Science	432-1251	Bg (72 ea)	Bait	1				

5/21/2007

Maxforce Roach FC Gel	Bayer Environmental Science	432-1259	Resrvr (1.05oz)	Bait	2				
Maxforce Roach Gel	Bayer Environmental Science	432-1254	Resrvr (1.05oz)	Bait	2				
Maxforce Roache Gel	Maxforce Insect Control	64248-5	Resrvr (2.1 oz)						
Maxforce Roach Bait FC	Bayer Environmental Science	432-1257	Bg (72 ea)	Bait					
Odor Pro deodorizer	American Bio-Systems		Gl	Deodorize	20				
Ortho Bug-Geta Snail/Slug	The Ortho Group	71096-7-239	Bg (2/4 lb)	Insecti	23				
Perma-Dust, 9 oz/cn-Whitmire	Whitmire Micro Gen	499-384	Cn (9 oz)	Aerosol	6				
Permethrin Pro	Micro Flo Company	51036-287	Jg(1.25gl)	Insecti	15/16				
Permethrin G-Pro	GRO-Pro	79676-2	Jg(1.25gl)	Insecti	17/18				
P.I. Contact Insecticide	Whitmire Micro Gen	499-444	Cn (18 oz)	Insecti					
Pre-Empt Roach Gel Bait	Bayer Corporation	3125-525	Resrvr (30 gm)	Bait	5				
Premise Gel	Bayer Corporation	3125-544	Cartridge(20gm)	Bait	11				
Rodeo	Monsanto	524-343	Jg (2.5 gl)	Herb.	3				
Roundup Pro	Monsanto	524-475	Jg (2.5 gl)	Herb.	4				
Supr odor neutralizer	Susan Products		Gl	Other	20				
Suspend SC	AgrEvo	432-763	Btl-(16 oz)	Insecti	21				
Talon Weather Blok XT	Zeneca Proffesional Products	10182-339	PL (11 Lbs)	Bait	26/27				
Talon Weather Blok XT	Sygenta	100-1055	PL (11 Lbs)	Bait	26/26				
TalstarOne	FMC Corporation	279-3206	Qt	Insecti					
Talstar PL Granules	FMC Corporation	279-3168	Bg (25 Lbs)	Insecti					
Tempo 20 WP	Bayer Corporation	3125-380	Jr (420 gm)	Insecti	17				
Tempo Ultra WP	Bayer Corporation	432-1304	Jr (420 gm)	Insecti	17				
Terro Ant Killer II	Senoret Chemical Co.	149-8	Btl (2 oz)	Bait	6				
Terro Ant Killer II	Senoret Chemical Co.	149-8	Gl	Bait	6				
Uld BP 300 -Btl	Whitmire Micri Gen	499-450	Btl (34 oz)	Insecti	23				
Uld BP 300 -Gl	Whitmire Micro Gen	499-450	Gl	Insecti	22				
Wasp Freeze	Whitmire Micro-Gen	499-362	Cn (17.5 oz)	Aerosol	8				
Whitmire PT 240	Whitmire Research Laboratories	499-220-AA	Cn	Aerosol	6				



Telephone Interview Form

Date: 18-Apr-07

Time: 9:15

Contract No.: N62742-06-D-1891 CTO: 0002 ESI Job No.: 106097

Project Title: ECP Option 1 and FOS to Support the MCBH Phase IV Housing PPV, Oahu, Hawaii

Conducted By: (b) (6)

Subject Property (SP): Capehart, Ulupau, Pa Honua Phase III, and Hana Like Neighborhoods, at KMCBH

Person Being Interviewed:

Name: (b) (6)

Title: MCBH Environmental

Address:

Phone/Email: (b) (6)

Association with site: POC for hazardous materials and former manager of the satellite accumulation site for hazardous materials, in building 1505

-
- 1) Spoke with (b) (6) who gave a brief description of the satellite accumulation site and its operation. He stated that it accepts household waste such as pesticides, cleaners, waste oil, propane cylinders, paint, solvents and other chemicals and stores it on site. The waste is then taken to another facility which handles the actual transport and disposal of industrial waste.

He then introduced me to (b) (6) who said that he would be able to provide a copy of the annual inspection of the facilities. See email to (b) (6)



Telephone Interview Form

Date: 4/19/2007

Contract No.: N62742-06-D-1891

CTO: 0002

ESI Job No.: 106097

Project Title: MCBH PPV Phase 4

Conducted By: (b) (6)

Subject Property (SP): Support areas (Bldg 1505, Bldg 4005, Maintenance Areas, Laydown Area) Housing Areas (Hana Like, Mololani, Pa Honua Phase III, Ulupau)

Person Being Interviewed:

Name: (b) (6)

Title: EPR ProjectManager

Address: _____

Phone/Email: (b) (6)

Association with site: _____

Recent spills - Inquired if he was aware of any recent spills at/near the housing areas or support areas. He responded no reportable spills.



Interview Form

Date: 18-Apr-07

Time: 10:30

Contract No.: N62742-06-D-1891 **CTO:** 0002 **ESI Job No.:** 106097

Project Title: ECP Option 1 and FOS to Support the MCBH Phase IV Housing PPV, Oahu, Hawaii

Conducted By: (b) (6)

Subject Property (SP): Capehart, Ulupau, Pa Honua Phase III, and Hana Like Neighborhoods, at KMCBH

Person Being Interviewed:

Name: (b) (6)

Title: Cultural Resource Management Specialist

Address:

Phone/Email: (b) (6)

Association with site: Cultural Resource POC

- 1) (b) (6) indicated that the subject properties were located in areas with low archeological value, with the exception of the housing units in the Mololani neighborhood (Bancroft Drive) near the coastline. During renovation and repairs to subsurface utilities in this area human remains have been found. Heleloa Beach is adjacent to the northwest and is considered of high archeological value. This area is listed in the Wherry program.

Kaluapuni is a new subdivision currently under construction and is adjacent and northwest of the Mololani neighborhood. During construction human remains and archeological artifacts were found. (b) (6) suggested emailing her a map indicating the areas of concern, so that she can look into them and inform me of any conditions I should be aware of.

From: (b) (6)
Sent: Thursday, April 19, 2007 3:14 PM
To: (b) (6)
Subject: Environmental Condition of Property interview conducted on 4/18/07

Attachments: DOC000.zip

Hi (b) (6)

I spoke with you briefly yesterday and would like to follow up with sending you a site map indicating the areas of concern. The areas of concern are the PPV neighborhoods Hana Like, Mololani (formerly known as Capehart), Pa Honua Phase III, and Ulupau (highlighted in yellow). In addition, we have four support areas which are highlighted in blue. Please inform me of any relevant archeological, cultural or historical designations within or adjacent to our subject properties.

Thank you for taking the time to assist us. Should you have any questions or need to contact me I can be reached at (b) (6).

Aloha,

(b) (6)

Environmental Science International, Inc.

56 Oneawa Street, Suite 103

Kailua, HI 96734

Ph: (b) (6)

Cell: (b) (6)



Telephone Interview Form

Date: 2-Apr-07

Time: 13:40

Contract No.: N62742-06-D-1891 CTO: 0002 ESI Job No.: 106097

Project Title: ECP Option 1 and FOS to Support the MCBH Phase IV Housing PPV, Oahu, Hawaii

Conducted By: (b) (6)

Subject Property (SP): Capehart, Ulupau, Pa Honua Phase III, and Hana Like Neighborhoods, at KMCBH

Person Being Interviewed:

Name: (b) (6)

Title: MCBH Environmental

Address:

Phone/Email: (b) (6)

Association with site: In charge of Radon Program for housing and non-housing areas in KMCBH.

- 1) Called and left message on 4/2/07
- 2) (b) (6) returned call 4/3/07 and mentioned that a new Radon survey is almost complete. She has a draft version but says we should hold on until the final comes out in a month. If we need it sooner she may be able to get us the draft version, however she will be changing positions in two weeks and we will have to get it through Helen.
- 3) (b) (6) called on 4/3/07 @ 2:35 pm and said the KMCBH Radon Final Report is complete and a copy will be given to (b) (6) for our review.

From: (b) (6)
Sent: Thursday, May 03, 2007 11:46 AM
To: (b) (6)
Cc: (b) (6)
Subject: MCBH Lighting Info.

Signed By: There are problems with the signature. Click the signature button for details.

Attachments: outdoor lighting checklist.pdf; fact sheet on light attraction and seabirds ALESept 2005.doc; guidance-notes-light-pollution.pdf; Andrea's Light guide to good and badlights.doc

Aloha (b) (6)

Here are the flyers I promised to get to you on lighting concerns. Don't hesitate to contact us (myself or L (b) (6), Natural Resources Specialist) if you have any further questions while (b) (6) is away. (b) (6)

<<...>> <<...>> <<...>> <<...>>

Contact Information for (b) (6) :
(b) (6)
Natural Resources Manager and
Installation Pest Management Coordinator
Environmental Dept
Marine Corps Base Hawaii

Ofc: (b) (6)
Cell: (b) (6)
Fax: (b) (6)

Hope this all helps!

Cheers,
(b) (6)
Wildlife Specialist, Consultant
MCBH Environmental Department
(b) (6)

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APPENDIX E

Site Reconnaissance Field Notes

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Site Reconnaissance Form

Date: 4/13/2007Contract No.: N62742-06-D-1891 CTO: 0 0 0 2 ESI Job No.: 106097Project Title: ECP Option 1 and FOS to Support the MCBH Phase IV Housing PPV, Oahu, HawaiiConducted By: (b) (6)Location: Bldg. 1360 to interview (b) (6), then to 2686 Uli St. to conduct site recononaissance.

Individuals Interviewed:

Name	Affiliation	Tel	Email
(b) (6)	POC for stormwater & wastewater	(b) (6)	

Photograph Nos:

Photo No.	Description
-----------	-------------

Photo1	View facing north toward bldg. 2686 and the CMU wall constructed to redirect stormwater runoff into the nearby surface drain .
--------	--



Photo2	View of the drainage culvert and surface drain located south of Bldg. 2686. Bldg. 2686 is visible in the background (left), with the Ulupau crater extending to the right.
--------	--



Photo3

View of the drainage ditch, facing northwest toward Heleloa beach. The discharge location located downgradient and to the west of the surface drain shown in photo2.

**Summary of Findings**

(b) (6) was not aware of any stormwater issues in the areas of concern. However, one building structure in the adjacent Nani Ulupau neighborhood required the construction of a wall to divert runoff from the hillside located northeast of the building structure. Flooding has not been a problem since the wall was constructed.

For wastewater distribution issues, (b) (6) suggested contacting (b) (6). (b) (6) says that he is responsible for wastewater treatment issues. The only recent wastewater spills that he is aware of, occurred near the clipper golf course area which is not within or adjacent to the areas of concern.

In addition, (b) (6) was able to provide information pertaining to the annual potable water testing conducted by the Board of Water Supply. A copy of the 2006 annual report was provided via email.



UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEHOE BAY, HAWAII 96861-3002

IN REPLY REFER TO:
5214
Ser LF/065-06j
11 Apr 06

From: Commanding General, Marine Corps Base Hawaii, Kaneohe Bay
To: Residents, MCBH Kaneohe Bay

Subj: MCBH KANEHOE BAY 2006 ANNUAL WATER QUALITY REPORT

Encl: (1) Board of Water Supply (BWS), City and County of Honolulu, 2006
Annual Water Quality Report

1. In 1998, the U.S. Environmental Protection Agency (EPA) put into effect regulations that require community water system operators to provide their customers an annual report on the quality of their drinking water. This letter, along with enclosure (1) describes where your water comes from, what was detected in the water in the past year, and how those results compare to standards for safe drinking water. **Test results show your drinking water meets all Federal and State standards and is safe to drink.**

2. MCBH Kaneohe Bay purchases its water from the City and County of Honolulu Board of Water Supply (BWS) and adds fluoride and chlorine (Dept. of Navy requirement) prior to delivering to its customers. MCBH Kaneohe Bay also tests the water for the following: lead and copper, fluoride, total trihalomethanes (TTHMS), total haloacetic acid (HAA5), asbestos, and total coliform bacteria. Water samples are taken daily, weekly, monthly and quarterly from various locations in the MCBH Kaneohe Bay distribution system, and analyzed by State certified laboratories. The tables below list the results of this testing for calendar year 2005. If a substance is not listed, then it was not detected.

Source Water Monitoring - MCBH Kaneohe Bay

Range						
Substance	Unit	Average	Min	Max	MCL(Allowed)	MCL (Goal)
Fluoride	PPM	0.60	0.00	0.95	4.00	4.00

Distribution System Monitoring - MCBH Kaneohe Bay

Range						
Substance	Unit	Average	Min	Max	MCL(Allowed)	MCL (Goal)
TTHMS(Bromoform)	PPB	2.5	1.5	3.1	80.000	0.000

Substance	Highest Number of Positive Monthly Samples*	MCL (Allowed)	MCL (Goal)
Total Coliform	1	1	0

Substance	Sample Year	Unit	90 th Percentile Reading	Action Level	# Samples Above Action Level
Copper	2003	PPM	0.08	1.300	0

* Total coliform positive sample showed no presence of fecal coliform
Repeat samples/tests were taken and results showed no presence of total coliform
PPM = parts per million PPB = parts per billion MCL = maximum contaminant level

3. A source water assessment for the wells serving MCBH Kaneohe Bay was completed in 2003, and is available for review at the MCBH Facilities Department. Additional test results and drinking water information can be found in enclosure (1). Questions regarding MCBH Kaneohe Bay Drinking Water (including the 2003 source water assessment) can be directed to David Faust of the MCBH (b) (6) 257-2774.

By direction

The water serving 600 MOKAPU RD has been tested and meets all
The water quality monitoring results are presented below.

The water sources serving this address are:

Source Name	Origin of Water	Treatment	Region
a) Maakua Well	Groundwater	Chlorination	1
b) Punaluu Wells II	Groundwater	None	2
c) Punaluu Wells III	Groundwater	None	2
d) Waihee Tunnel	Groundwater	Chlorination	2

Source Water Monitoring

The substances detected in these sources are shown below. If a substance is not shown, it was not detected.

Regulated Contaminants (1)

Contaminant	Sample Year	Unit	Average	Range		MCL (Allowed)	MCLG (Goal)	Found in Sources
				Minimum	Maximum			
Alpha Emitters (2)	2003	pCi/L	1.500	1.500	1.500	15.000	0.000	b
Beta/Photon Emitters (2)	2003	pCi/L	2.000	0.900	2.800	50 *	0.000	All Sources
Radium 228 (2)	2003	pCi/L	0.624	0.624	0.624	5.000	0.000	d

Definitions	
MCL	Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
MCLG	Maximum Contaminant Level Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Action Level	The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
CFU/100ml	Colony forming units per 100 milliliter
mrem/yr	Millirems Per Year (A Measure of Radiation)
pCi/L	Picocuries Per Liter (A Measure of Radioactivity)
ppb	Parts Per Billion or Micrograms Per Liter
ppm	Parts Per Million or Milligrams Per Liter
ppt	Parts Per Trillion or Nanograms Per Liter
ND	Not Quantifiable (< means "less than")
NYA	Not Yet Available
N/A	Not Applicable
ND	Not Detected
*	EPA considers 50 pCi/L to be the level of concern for beta particles
(1)	Analysis by the State of Hawaii Department of Health.
(2)	Analysis by the Honolulu Board of Water Supply. Questions, call 808-748-5370.

ENCLOSURE (1)

Federal and state law requires testing your drinking water for many different types of contaminants. Below is a complete list.

Regulated Primary Contaminants

Acrylamide	2,4-D	Ethylene dibromide (EDB)	Radium 226 + 228
Alachlor	Dalapon	Fecal coliform (and E. Coli)	Selenium
Alpha emitters	Di(2-ethylhexyl)adipate	Fluoride	Simazine
Antimony	Dibromochloropropane (DBCP)	Glyphosate	Styrene
Arsenic	o-Dichlorobenzene	Haloacetic Acids (HAA5)	Tetrachloroethylene (PCE)
Asbestos (>10 µm)	p-Dichlorobenzene	Heptachlor	Thallium
Atrazine	1,2-Dichloroethane	Heptachlor epoxide	Toluene
Barium	1,1-Dichloroethylene	Hexachlorobenzene	Total coliforms
Benzene	cis-1,2-Dichloroethylene	Hexachlorocyclopentadiene	Total Trihalomethanes (TTHMs)
Beryllium	trans-1,2-Dichloroethylene	Lead	Toxaphene
Beta/photon emitters	Dichloromethane	Lindane	2,4,5-TP
Bromate	1,2-Dichloropropane (DCP)	Mercury (total)	1,2,4-Trichlorobenzene
Cadmium	Dinoseb	Methoxychlor	1,1,1-Trichloroethane
Carbofuran	Dioxin	Nitrate (as N)	1,1,2-Trichloroethane
Carbon tetrachloride	Di(2-ethylhexyl)phthalate	Nitrite (as N)	Trichloroethylene (TCE)
Chlordane	Diquat	Oxamyl (Vydate)	1,2,3-Trichloropropane (TCP)
Chlorite	Endothall	PCBs	Turbidity
Chlorobenzene	Endrin	Pentachlorophenol	Uranium
Chromium (total)	Epichlorohydrin	Picloram	Vinyl chloride
Copper	Ethylbenzene	Polyaromatic hydrocarbons	Xylenes (total)
Cyanide		[benzo(a) pyrene]	

Unregulated Contaminants

Acetochlor	4,4'-DDE	EPTC	Nitrobenzene
Aeromonas	Dieldrin	Manganese	Perchlorate
Bromoform	2,4-dinitrotoluene	Methyl t-butylether (MTBE)	Sulfate
DCPA mono-acid degradate	2,6-dinitrotoluene	Molinate	Terbacil
DCPA di-acid degradate			

Measurements In this report, one part per million (ppm) is the same as one milligram of the substance in one liter of water (mg/L). To put this into perspective, one part per million is approximately one second in 11.5 days. One part per billion (ppb) is even smaller! – about 1 second in 31.7 years.

Federal and State standards.

Unregulated Contaminants (Do not have designated maximum limits but require monitoring)

Contaminant	Tested By	Sample Year	Unit	Average	Range		Action Level	Found in Sources
					Minimum	Maximum		
Sulfate	(1)	2005	ppm	15,000	10,000	15,000	250 **	All Sources

** Secondary Maximum Contaminant Level (SMCL) are standards established as guidelines to assist public water systems in managing the aesthetic quality (taste, odor and color) of drinking water. EPA does not enforce SMCLs.

Distribution System Monitoring

Disinfection By-Products (1)

System Name	Contaminant	Unit	Average	Range		MCL (Allowed)	MCLG (Goal)
				Minimum	Maximum		
Honolulu-Windward-Pearl Harbor	Bromoform	ppb	0.935	ND	3.500	NYA	0
Honolulu-Windward-Pearl Harbor	TTHMS [Total Trihalometanes]	ppb	0.935	ND	3.500	80,000	N/A

Microbial Contaminants (2)

System Name	Contaminant	Unit	Highest***	MCL (Allowed)	MCLG (Goal)	Typical Source of Contaminant
Honolulu-Windward-Pearl Harbor	Total Coliform		1.11	5%	0	Naturally present in the environment
Honolulu-Windward-Pearl Harbor	Fecal Coliform Bacteria	Pos/Neg	1 positive sample	A routine sample and a repeat sample are total coliform positive, and one is also fecal coliform or E.coli positive	0	Human and animal fecal waste

*** Highest monthly percentage of positive samples

Lead/Copper Testing (1)

Contaminant	Sample Year	Unit	90th Percentile Reading	Action Level	# Samples Above Action Level
Copper	2003	ppm	0.060	1.300	0

A N N U A L

WATER QUALITY REPORT

Supplemental Information
Pamphlet



Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843
boardofwatersupply.com

Acknowledgments

City and County of Honolulu

Mufi Hannemann, *Mayor*

Board of Water Supply

Randall Y. S. Chung, *Chair*

Samuel T. Hata

Herbert S. K. Kaopua, Sr.

Ally J. Park

Rodney K. Haraga, *Ex-Officio*

Laverne T. Higa, *Ex-Officio*

Honolulu City Council

Donovan M. Dela Cruz, *Chair*

Ann H. Kobayashi, *Vice Chair*

Romy M. Cachola, *Floor Leader*

Todd K. Apo

Charles K. Djou

Nestor R. Garcia

Barbara Marshall

Gary H. Okino

Rod Tam

State of Hawaii, Department of Health

Dr. Chiyome Fukino, *Director*

Where Can I Get More Information

Visit our web site at boardofwatersupply.com or call Customer Care help line at (808) 748-5370. You can also reach us by fax at (808) 550-5566, or send e-mail to ccr@hbws.org.

For information about the following topics, call:

Environmental Protection Agency

Federal drinking water regulations, health effects

Safe Drinking Water Hotline 1-800-426-4791

State Department of Health

State and Federal drinking water standards, Hawaii drinking water monitoring/compliance, health effects

Safe Drinking Water Branch (808) 586-4258

Honolulu Board of Water Supply

Customer Care help line (808) 748-5370

Water testing program (chemicals) (808) 748-5840

Microbiology testing/chlorine taste (808) 748-5850

Copies of Water Quality Report and Supplemental Pamphlet (808) 748-5370

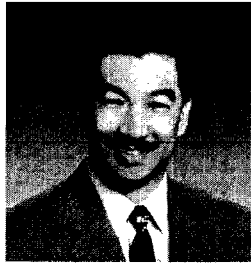
How Can I Get Involved?

The Board meets at 2:00 p.m. on the fourth Monday of each month at the Board of Water Supply, 630 South Beretania Street, Honolulu, Hawaii. You are invited to participate in these meetings. For copies of Board meeting schedules and minutes, call (808) 748-5064.

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Our Commitment to Quality



The Board of Water Supply (BWS) is committed to providing you with quality drinking water and reliable service at the most reasonable cost. This commitment includes servicing our customer's needs and ensuring confidence in the water supply every time the tap is turned on.

Since 1998, U. S. Environmental Protection Agency (EPA) regulations require community water systems provide their customers an annual report on the quality of their drinking water. This regulation is called the Consumer Confidence Report (CCR) rule.

This pamphlet, along with the accompanying water quality report, describes where your water comes from, what is in the water, and how the test results compare to standards for safe drinking water.

For more information, call our Customer Care help line at (808) 748-5370. You can also fax us at (808) 550-5566 or send e-mail to ccr@hbws.org. This pamphlet is available on our web site at boardofwatersupply.com.

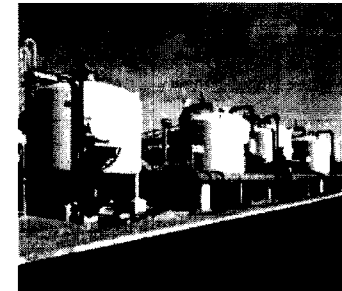
Mahalo,



CLIFFORD P. LUM
Manager and Chief Engineer
Board of Water Supply

What Can I Conclude about Oahu's Water Supply?

All of our water contains naturally-occurring substances. Some of our wells also have been found to contain low levels of certain chemical contaminants.



Granular Activated Carbon treatment

Treatment becomes necessary when the amount of contaminant begins to increase and approaches the maximum allowable limit. When this situation develops, the BWS will install and operate treatment facilities to remove the contaminants. Since 1986, BWS has been treating water serving the Mililani, Waipahu, Ewa, Kapolei, Waipio, Haleiwa, and Waialua areas.

Nature does an excellent job in providing us with abundant drinking water. However, nature needs our active participation in order to maintain its clarity and purity. **Use water wisely.** Dispose of wastes properly and support recycling. Protecting our water resources begins with protecting our environment.

nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask advice from your health care provider if the nitrate level is between 5 to 10 ppm.

Radium occurs naturally in groundwater from the erosion of natural deposits.

Radon is a naturally-occurring radioactive substance found everywhere on earth. It is a colorless, odorless gas produced from the natural decomposition of uranium. Because radon is a gas, it can move from water to the air in the course of dishwashing, showering and other water-using activities. In the atmosphere, radon is harmless because it is diluted. However, in enclosed spaces such as basements, radon levels can build up. Appropriate ventilation is the best way to prevent indoor air accumulation of radon.

Sulfates occur naturally in minerals, soil, rocks and natural waters. EPA has established a secondary MCL of 250 ppm for sulfates since large amounts may affect the taste of drinking water.

Tetrachloroethylene (PCE) is an organic chemical that may come from leaching from PVC pipes, discharge from factories, and dry cleaners.

Total coliform bacteria are naturally present in the environment.

Trichloroethylene (TCE) is an organic chemical that may come from metal degreasing sites and other factories.

1,2,3-Trichloropropane (TCP) is an organic chemical formerly used as a soil fumigant in agriculture and as a gasoline additive. It has been found in a number of wells in Central Oahu.

The Board of Water Supply

The Board of Water Supply is a semi-autonomous agency of the City and County of Honolulu and the municipal water supplier for the island of Oahu. The agency is self-supporting, funding its operations and projects from water sales.



BWS headquarters

The Board's policies are set by a seven-member board of directors, six of whom are appointed by the Mayor and approved by the Honolulu City Council. Five of those board members are from the general public; a sixth is the director of the City's Department of Facility Maintenance (formerly Department of Public Works). The seventh is the director of the State Department of Transportation.

Is My Drinking Water Really Safe?



Yes. We take our responsibility to provide safe drinking water very seriously. Like you, we and our families also drink the same water and share the same concerns about its quality.

Islandwide, the Board of Water Supply operates over 130 sources that are located among nine different water regions (shown in the center of this pamphlet). Your tap water generally comes from those sources located within your area and not from all 130. The report accompanying this pamphlet shows the name of the source(s) serving your area and the region it is located in.



Each year, these sources and systems are tested for more than 100 different types of contaminants by the State Department of Health (DOH) and the Board of Water Supply (BWS). See the water quality report for a complete listing.

The sources serving your area did not contain any of the listed contaminants except for the ones shown on the report. In all cases, the amounts found are fully compliant with the standards for safe drinking water.

Dibromochloropropane (DBCP) is an organic chemical formerly used in Hawaii as a soil fumigant in pineapple cultivation and a petroleum additive. It has been found in several groundwater wells in Central Oahu.

1,2-Dichloropropane (DCP) is an organic chemical used as a solvent and pesticide that may occur in drinking water by leaching into groundwater. It also may come from improper waste disposal and discharge from industrial chemical factories.

Dieldrin is an organic chemical once used as a pesticide for controlling ground termites and may occur in drinking water by leaching into groundwater.

Ethylene dibromide (EDB) is an organic chemical formerly used in Hawaii as a soil fumigant in pineapple cultivation and petroleum additive. It has been found in some groundwater wells in Central Oahu.

Fecal coliform bacteria and **E. Coli** can be found in human and animal fecal waste and may also be found in soil.

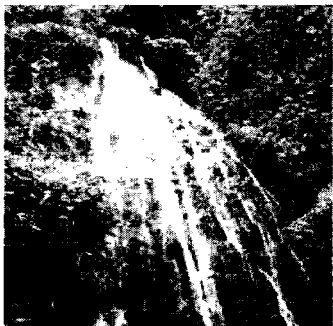
Fluoride occurs naturally in groundwater. According to EPA, it may also come from the erosion of natural deposits or discharged from fertilizer and aluminum factories. It can be a water additive that promotes strong teeth.

Haloacetic Acids (HAA) and **Total Trihalomethanes (TTHMs)** [such as bromoform and dibromochloromethane] are by-products of drinking water chlorination.

MTBE is used in gasoline to reduce auto emissions.

Nitrate (as nitrogen) occurs naturally in groundwater. According to EPA, nitrates may come from runoff from fertilizer use or leaching from septic tanks, sewage, or erosion of natural deposits. Nitrate in drinking water at levels above 10 parts per million (ppm) is a health risk for infants of less than six months of age. High

What Kinds of Contaminants Have Been Found in Oahu's Water?



Waihee Falls, Windward Oahu

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. Below is a list of substances that have been found in Oahu's water and their possible sources.

See the water quality

report for the substances found in your water. In all cases, the amounts present are fully compliant with the standards.

Alpha and beta activity occur naturally in groundwater from the erosion of natural deposits and decay of natural and man-made deposits.

Atrazine may occur from runoff from herbicide used on row crops.

Barium may occur naturally in groundwater from the erosion of natural deposits.

Bromide occurs naturally in the environment and is not being considered for regulation.

Carbon tetrachloride is an organic chemical that may occur in drinking water from discharge from chemical plants and other industrial activities.

Chromium may occur naturally in groundwater from the erosion of natural deposits.

Copper may occur in tap water from new or the corrosion of household copper plumbing systems, erosion of natural deposits, or leaching from wood preservatives.

Drinking Water Standards and Testing

In order to ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish

limits for contaminants in bottled water which must provide the same protection for public health.

A contaminant is any substance that may pose a potential health concern if present in very large quantities. The highest amount allowable in drinking water is known as the maximum contaminant level. This limit is the standard for safe drinking water and is set by federal and/or state health agencies.

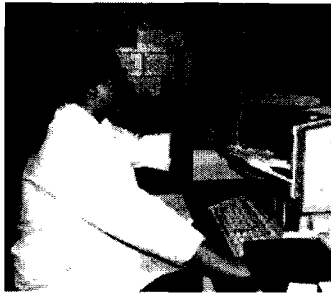
The regulations require testing tap water for many different categories of contaminants. One category is the regulated or primary contaminants. Each has a maximum contaminant goal and maximum contaminant level. The **Maximum Contaminant Level Goal** (MCLG) is the level of a contaminant in drinking water

below which there is no known or expected risk to health. MCLGs allow for a margin of safety. The **Maximum Contaminant Level** (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as



close to the MCLGs as feasible using the best available treatment technology.

The regulations also have testing requirements for certain unregulated contaminants. See the water quality report for the complete listing of



regulated and unregulated contaminants. Health agencies generally do not specify MCLs or MCLGs for unregulated contaminants. However, they may establish an **action level** which is the concentration of a contaminant which,

if exceeded, triggers treatment or other requirements that a water system must follow.

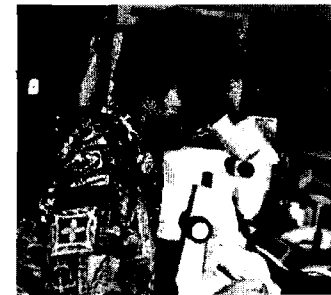
The rules also require testing the water in the distribution system (for trihalomethanes and coliform bacteria) and at the consumer's tap (for lead and copper).

Each contaminant category has its own monitoring frequency established by regulation. Generally, testing is performed annually. If a contaminant is detected, then testing is done quarterly. Monitoring for certain contaminants (such as alpha and beta activity) is performed less than once a year because the amount present does not change frequently. For this reason, some of the data can be more than a year old.

The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline 1-800-426-4791 or the State of Hawaii Department of Health at (808) 586-4258.



Some people may be more vulnerable to contaminants in drinking water than the general population.



Immuno-compromised individuals such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can

be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by cryptosporidium are available from the Safe Drinking Water Hotline at 1-800-426-4791 or the State of Hawaii Department of Health at (808) 586-4258.



What Kinds of Contaminants are a Concern to Drinking Water?



Streamflow in Windward Oahu

Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

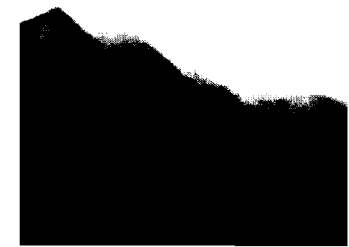
Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

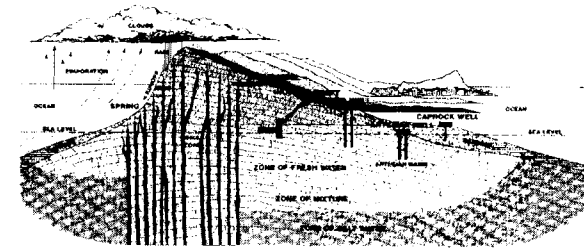
Where Does My Water Come From?

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. On Oahu, drinking water begins as rain falling over the Koolau and Waianae Mountain



Mist over the Koolaus

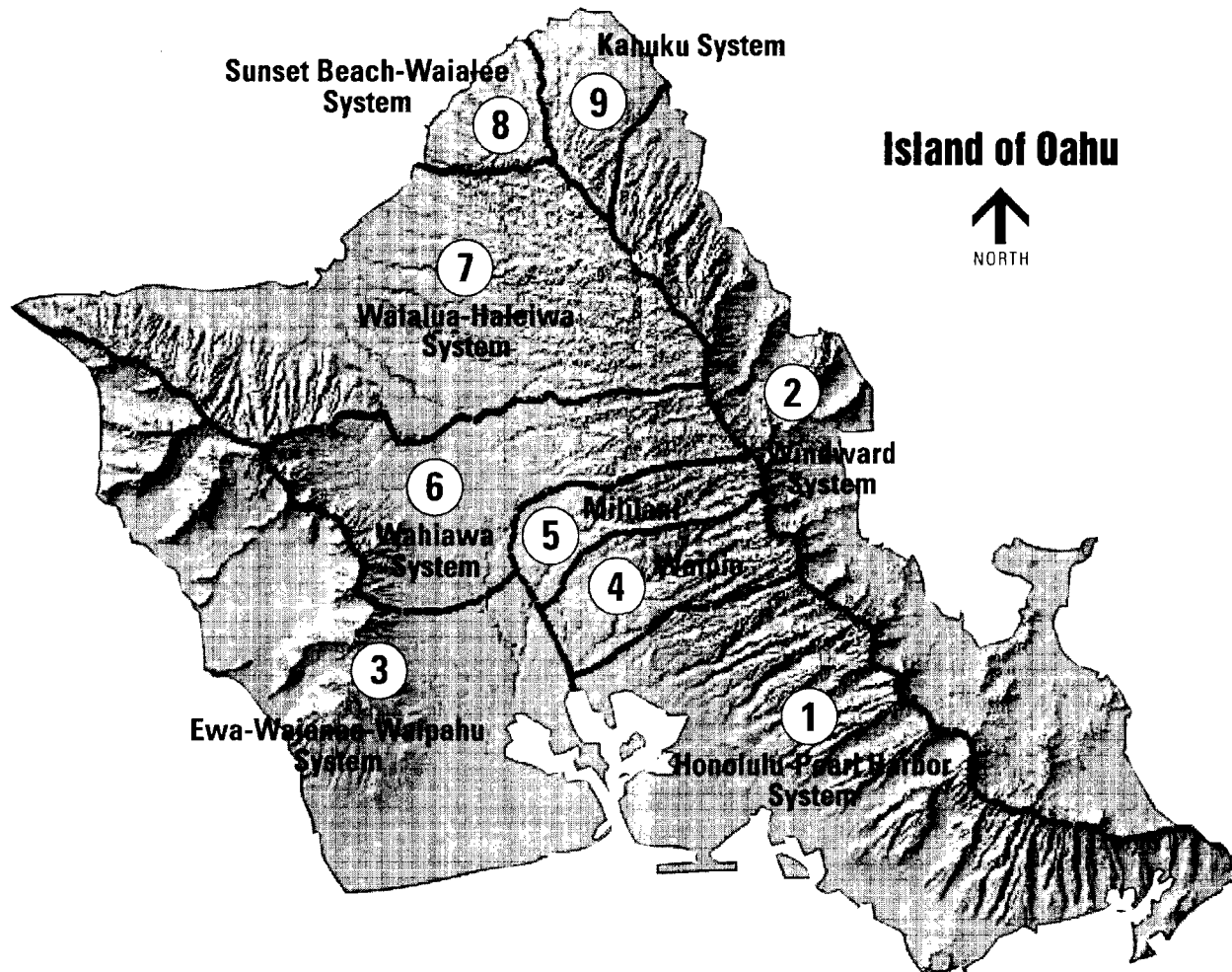
ranges. Because volcanic rock is porous, much of this rain is naturally filtered through the ground on its way to large underground formations called aquifers.



Schematic chart showing Oahu's water sources (not to scale)

As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material. Also, it can pick up substances resulting from the presence of animals or from human activity.

Source Water Assessments, reports that evaluate the susceptibility of our drinking water sources to pollution, have been completed as of 2004. These reports are available for review by calling Erwin Kawata at (808) 748-5080.



BWS Water Sources and Systems

The Board of Water Supply operates and maintains over 130 water sources that combine to deliver an average of 150 million gallons of water per day.

The water is supplied through a distribution system that contains over 1,900 miles of pipeline and 160 reservoirs. The entire system is monitored 24 hours a day.

APPENDIX F

Photographs

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Photo 1: Typical Duplex Unit - Mololani Neighborhood.



Photo 2: Typical Single Unit - Mololani Neighborhood..



Photo 3: Pa Honua 3 Neighborhood.



Photo 4: Typical Duplex Units, Pa Honua 3 Neighborhood.



Photo 5: Ulupau Neighborhood.



Photo 6: Typical Unit – Ulupau Neighborhood.

Environmental Condition of Property
Hawaii PPV Housing Phase 4
MCBH Kaneohe Bay, HI

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APPENDIX G

Property List

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PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI	1700 Lawrence Rd	1700	1959	1642	1	
	1701 Lawrence Rd	1701	1959	1612	1	
	1702 Lawrence Rd	1702	1959	1642	1	
	1703 Lawrence Rd	1703	1959	1642	1	
	1704 Lawrence Rd	1704	1959	1612	1	
	1705 Lawrence Rd	1705	1959	1642	1	
	1706 Lawrence Rd	1706	1959	1612	1	
	1707 Lawrence Rd	1707	1959	1612	1	
	1708 Lawrence Rd	1708	1959	1320	1	
	1709 Lawrence Rd	1709	1959	1320	1	
	1710 Lawrence Rd	1710	1959	1642	1	
	1711 Lawrence Rd	1711	1959	1612	1	
	1712 Lawrence Rd	1712	1959	1612	1	
	1713 Lawrence Rd	1713	1959	1642	1	
	1714 Lawrence Rd	1714	1959	1642	1	
	1715 Lawrence Rd	1715	1959	1642	1	
	1716 Lawrence Rd	1716	1959	1612	1	
	1717 Lawrence Rd	1717	1959	1612	1	
	1718 Lawrence Rd	1718	1959	1642	1	
	1719 Lawrence Rd	1719	1959	1612	1	
	1720 Lawrence Rd	1720	1959	1612	1	
	1721 Lawrence Rd	1721	1959	1612	1	
	1723 Lawrence Rd	1723	1959	1320	1	
	1725 Lawrence Rd	1725	1959	1612	1	
	1727 Lawrence Rd	1727	1959	1612	1	
	1729 Lawrence Rd	1729	1959	1642	1	
	1731 Lawrence Rd	1731	1959	1642	1	
	1733 Lawrence Rd	1733	1959	1612	1	
	1735 Lawrence Rd	1735	1959	1612	1	
	1736 Lawrence Rd	1736	1959	1612	1	
	1737 Lawrence Rd	1737	1959	1320	1	
	1738 Lawrence Rd	1738	1959	1320	1	
	1739 Lawrence Rd	1739	1959	1642	1	
	1740 Lawrence Rd	1740	1959	1612	1	
	1741 Lawrence Rd	1741	1959	1612	1	
	1742 Lawrence Rd	1742	1960	1794	1	
	1743 Lawrence Rd	1743	1959	1642	1	
	1744 Lawrence Rd	1744	1960	1856	1	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	1745 Lawrence Rd	1745	1959	1612	1	
	1746 Lawrence Rd	1746	1960	1756	1	
	1747 Lawrence Rd	1747	1959	1642	1	
	1748 Lawrence Rd	1748	1959	1794	1	
	1749 Lawrence Rd	1749	1959	1320	1	
	1750 Lawrence Rd	1750	1960	1794	1	
	1751 Lawrence Rd	1751	1959	1612	1	
	1752 Lawrence Rd	1752	1960	1756	1	
	1753 Lawrence Rd	1753	1959	1642	1	
	1755 Lawrence Rd	1755	1960	3302	2	
	1756 Lawrence Rd	1756	1960	1794	1	
	1757 Lawrence Rd	1757	1959	3120	2	
	1758 Lawrence Rd	1758	1959	1856	1	
	1759-A Lawrence Rd	1759	1960	3096	2	
	1760 Lawrence Rd	1760	1959	1794	1	
	1761 Lawrence Rd	1761	1959	3118	2	
	1762 Lawrence Rd	1762	1959	1794	1	
	1763 Lawrence Rd	1763	1960	3302	2	
	1764 Lawrence Rd	1764	1959	1794	1	
	1765 Lawrence Rd	1765	1959	2640	2	
	1766 Lawrence Rd	1766	1959	1647	1	
	1767 Lawrence Rd	1767	1959	3096	2	
	1768 Lawrence Rd	1768	1959	1756	1	
	1769 Lawrence Rd	1769	1959	3302	2	
	1770 Lawrence Rd	1770	1960	1647	1	
	1771 Lawrence Rd	1771	1959	3120	2	
	1772 Lawrence Rd	1772	1960	1794	1	
	1773 Lawrence Rd	1773	1959	3302	2	
	1774 Lawrence Rd	1774	1960	1856	1	
	1775 Lawrence Rd	1775	1960	3302	2	
	1776 Lawrence Rd	1776	1960	1794	1	
	1777 Lawrence Rd	1777	1960	3120	2	
	1778 Lawrence Rd	1778	1960	3120	2	
	1779 Lawrence Rd	1779	1960	3302	2	
	1780 Lawrence Rd	1780	1960	3302	2	
	1781 Lawrence Rd	1781	1960	3096	2	
	1782 Lawrence Rd	1782	1960	3096	2	
	1783 Lawrence Rd	1783	1960	3118	2	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	1784 Lawrence Rd	1784	1960	2640	2	
	1785 Lawrence Rd	1785	1960	3302	2	
	1786 Lawrence Rd	1786	1960	3302	2	
	1787 Lawrence Rd	1787	1960	3120	2	
	1788 Lawrence Rd	1788	1960	3120	2	
	1789 Lawrence Rd	1789	1960	3096	2	
	1790 Lawrence Rd	1790	1960	3118	2	
	1791 Lawrence Rd	1791	1960	2640	2	
	1792 Lawrence Rd	1792	1960	3096	2	
	1793 S Lawrence Rd	1793	1960	3302	2	
	1794 S Lawrence Rd	1794	1960	3302	2	
	1795 S Lawrence Rd	1795	1960	3096	2	
	1796 S Lawrence Rd	1796	1960	1548	1	
	1797 S Lawrence Rd	1797	1960	3302	2	
	1798 S Lawrence Rd	1798	1960	3302	2	
	1799 S Lawrence Rd	1799	1960	3118	2	
	1801 S Lawrence Rd	1801	1960	3120	2	
	1803 S Lawrence Rd	1803	1960	3302	2	
	1804 S Lawrence Rd	1804	1960	3302	2	
	1805 S Lawrence Rd	1805	1960	3302	2	
	1806 S Lawrence Rd	1806	1960	3118	2	
	1807 S Lawrence Rd	1807	1960	3120	2	
	1808 S Lawrence Rd	1808	1960	3096	2	
	1809 S Lawrence Rd	1809	1960	3302	2	
	1810 S Lawrence Rd	1810	1960	2640	2	
	1811 S Lawrence Rd	1811	1960	3096	2	
	1812 S Lawrence Rd	1812	1959	1642	1	
	1813 S Lawrence Rd	1813	1959	1612	1	
	1814 S Lawrence Rd	1814	1959	1612	1	
	1815 S Lawrence Rd	1815	1959	1612	1	
	1821 Harris Ave	1821	1960	3096	2	
	1822 Harris Ave	1822	1959	3302	2	
	1823 Harris Ave	1823	1960	3120	2	
	1824 Harris Ave	1824	1959	3302	2	
	1825 Harris Ave	1825	1960	3302	2	
	1826 Harris Ave	1826	1959	3118	2	
	1827 Harris Ave	1827	1960	2640	2	
	1828 Harris Ave	1828	1959	3302	2	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	1830 Harris Ave	1830	1959	1642	1	
	1832 Harris Ave	1832	1959	1642	1	
	1834 Harris Ave	1834	1959	1612	1	
	1836 Harris Ave	1836	1959	1612	1	
	1838 Harris Ave	1838	1959	1612	1	
	1840 Harris Ave	1840	1959	1642	1	
	1841 Harris Ave	1841	1960	2640	2	
	1842 Harris Ave	1842	1959	1612	1	
	1843 Harris Ave	1843	1960	3118	2	
	1844 Harris Ave	1844	1959	1320	1	
	1845 Harris Ave	1845	1960	3302	2	
	1846 Harris Ave	1846	1959	1320	1	
	1847 Harris Ave	1847	1960	3096	2	
	1848 Harris Ave	1848	1959	1612	1	
	1850 Harris Ave	1850	1959	1642	1	
	1852 Harris Ave	1852	1959	1642	1	
	1854 Harris Ave	1854	1959	1612	1	
	1856 Harris Ave	1856	1959	1612	1	
	1860 Marmande Dr	1860	1959	1612	1	
	1862 Marmande Dr	1862	1959	1612	1	
	1864 Marmande Dr	1864	1959	1642	1	
	1865 Marmande Dr	1865	1959	3096	2	
	1866 Marmande Dr	1866	1959	1642	1	
	1867 Marmande Dr	1867	1959	3302	2	
	1868 Marmande Dr	1868	1959	1612	1	
	1870 Marmande Dr	1870	1959	1612	1	
	1872 Marmande Dr	1872	1959	1642	1	
	1874 Marmande Dr	1874	1959	1612	1	
	1876 Marmande Dr	1876	1959	1642	1	
	1878 Marmande Dr	1878	1959	1642	1	
	1880 Marmande Dr	1880	1959	1612	1	
	1881-A Marmande Dr	1881	1959	3120	2	
	1882 Marmande Dr	1882	1959	1612	1	
	1890 Mahannah Cir	1890	1960	3302	2	
	1892 Mahannah Cir	1892	1960	3118	2	
	1894 Mahannah Cir	1894	1960	3302	2	
	1895 Mahannah Cir	1895	1960	3096	2	
	1896 Mahannah Cir	1896	1960	2640	2	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	1897 Mahannah Cir	1897	1960	3302	2	
	1898 Mahannah Cir	1898	1960	3096	2	
	1899 Mahannah Cir	1899	1960	3302	2	
	1900 Mahannah Cir	1900	1960	3118	2	
	1902 Mahannah Cir	1902	1960	3120	2	
	1904 Mahannah Cir	1904	1960	3302	2	
	1918 Mclennan Dr	1918	1959	3120	2	
	1919 Mclennan Dr	1919	1959	3302	2	
	1920 Mclennan Dr	1920	1959	3302	2	
	1921 Mclennan Dr	1921	1959	3120	2	
	1922 Mclennan Dr	1922	1959	3096	2	
	1923 Mclennan Dr	1923	1959	3302	2	
	1924 Mclennan Dr	1924	1959	2640	2	
	1925 Mclennan Dr	1925	1959	3302	2	
	1926 Mclennan Dr	1926	1959	3302	2	
	1927 Mclennan Dr	1927	1959	2640	2	
	1928 Mclennan Dr	1928	1959	3120	2	
	1929 Mclennan Dr	1929	1959	1642	1	
	1930 Mclennan Dr	1930	1959	3096	2	
	1931 Mclennan Dr	1931	1959	1612	1	
	1932 Mclennan Dr	1932	1959	3120	2	
	1934 Mclennan Dr	1934	1959	3302	2	
	1940 Parks Ave	1940	1959	2640	2	
	1941 Parks Ave	1941	1959	3096	2	
	1942 Parks Ave	1942	1959	3096	2	
	1943 Parks Ave	1943	1959	3302	2	
	1944 Parks Ave	1944	1959	3302	2	
	1945 Parks Ave	1945	1959	3120	2	
	1946 Parks Ave	1946	1959	3120	2	
	1947 Parks Ave	1947	1959	3302	2	
	1948 Parks Ave	1948	1959	3120	2	
	1949 Parks Ave	1949	1959	2640	2	
	1950 Hanson Cir	1950	1960	3120	2	
	1951 Hanson Cir	1951	1960	3096	2	
	1952 Hanson Cir	1952	1960	3302	2	
	1953 Hanson Cir	1953	1960	3302	2	
	1954 Hanson Cir	1954	1960	3096	2	
	1955 Hanson Cir	1955	1960	3120	2	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	1956 Hanson Cir	1956	1960	3302	2	
	1957 Hanson Cir	1957	1960	2640	2	
	1958 Hanson Cir	1958	1960	3120	2	
	1959 Hanson Cir	1959	1960	3096	2	
	1960 Hanson Cir	1960	1960	3302	2	
	1961 Hanson Cir	1961	1960	3118	2	
	1962 Hanson Cir	1962	1960	3096	2	
	1963 Hanson Cir	1963	1960	3302	2	
	1964 Hanson Cir	1964	1960	3120	2	
	1966 Hanson Cir	1966	1960	3302	2	
	1968 Hanson Cir	1968	1960	3096	2	
	1970 Hanson Cir	1970	1960	3120	2	
	1971 Hanson Cir	1971	1960	2640	2	
	1972 Hanson Cir	1972	1960	3096	2	
	1973 Hanson Cir	1973	1960	3302	2	
	1974 Hanson Cir	1974	1960	3302	2	
	1975 Hanson Cir	1975	1960	3118	2	
	1976 Hanson Cir	1976	1960	3096	2	
	1977 Hanson Cir	1977	1960	3302	2	
	1978 Hanson Cir	1978	1960	3120	2	
	1979 Hanson Cir	1979	1960	3120	2	
	1980 Hanson Cir	1980	1960	3302	2	
	1981 Hanson Cir	1981	1960	3302	2	
	1982 Hanson Cir	1982	1960	2640	2	
	1990 Fleming Cir	1990	1960	3096	2	
	1991 Fleming Cir	1991	1960	3302	2	
	1992 Fleming Cir	1992	1960	2640	2	
	1993 Fleming Cir	1993	1960	3120	2	
	1994 Fleming Cir	1994	1960	3302	2	
	1995 Fleming Cir	1995	1960	1548	1	
	1996 Fleming Cir	1996	1960	3120	1	
	1997 Fleming Cir	1997	1960	3120	2	
	1998 Fleming Cir	1998	1960	3096	2	
	1999 Fleming Cir	1999	1960	3302	2	
	2000 Fleming Cir	2000	1960	3120	2	
	2002 Fleming Cir	2002	1960	3120	2	
	2004 Fleming Cir	2004	1960	3302	2	
	2006 Fleming Cir	2006	1960	3118	2	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	2008 Fleming Cir	2008	1960	3302	2	
	2009 Fleming Cir	2009	1960	3096	2	
	2010 Fleming Cir	2010	1960	3120	2	
	2012 Fleming Cir	2012	1960	3120	2	
	2013 Fleming Cir	2013	1960	3302	2	
	2014 Fleming Cir	2014	1960	3302	2	
	2015 Fleming Cir	2015	1960	3120	2	
	2016 Fleming Cir	2016	1960	3096	2	
	2017 Fleming Cir	2017	1960	3302	2	
	2020 Brown Dr	2020	1960	3096	2	
	2022 Brown Dr	2022	1960	3302	2	
	2024 Brown Dr	2024	1960	3120	2	
	2025 Brown Dr	2025	1960	3096	2	
	2026 Brown Dr	2026	1960	3302	2	
	2027 Brown Dr	2027	1960	2640	2	
	2028 Brown Dr	2028	1960	3302	2	
	2029 Brown Dr	2029	1960	1651	2	
	2030 Brown Dr	2030	1960	3120	2	
	2031 Brown Dr	2031	1960	3120	2	
	2032 Brown Dr	2032	1960	3302	2	
	2033 Brown Dr	2033	1960	3096	2	
	2034 Brown Dr	2034	1960	3096	2	
	2035 Brown Dr	2035	1960	3120	2	
	2036 Brown Dr	2036	1960	3302	2	
	2037 Brown Dr	2037	1960	3302	2	
	2038 Brown Dr	2038	1960	3120	2	
	2039 Brown Dr	2039	1960	3096	2	
	2040 Brown Dr	2040	1960	3118	2	
	2041 Brown Dr	2041	1960	3302	2	
	2042 Brown Dr	2042	1960	3302	2	
	2043 Brown Dr	2043	1960	3118	2	
	2044 Brown Dr	2044	1960	3096	2	
	2045 Brown Dr	2045	1960	3120	2	
	2046 Brown Dr	2046	1960	2640	2	
	2047 Brown Dr	2047	1960	3302	2	
	2048 Brown Dr	2048	1960	3302	2	
	2049 Brown Dr	2049	1960	3096	2	
	2050 Brown Dr	2050	1960	3120	2	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	2052 Brown Dr	2052	1960	3302	2	
	2061 Campion Dr	2061	1960	3302	2	
	2063 Campion Dr	2063	1960	3120	2	
	2064 Campion Dr	2064	1960	3120	2	
	2065 Campion Dr	2065	1960	3302	2	
	2066 Campion Dr	2066	1960	3096	2	
	2067 Campion Dr	2067	1960	3096	2	
	2068 Campion Dr	2068	1960	3302	2	
	2069 Campion Dr	2069	1960	3118	2	
	2070 Campion Dr	2070	1960	3120	2	
	2071 Campion Dr	2071	1960	3302	2	
	2072 Campion Dr	2072	1960	3096	2	
	2073 Campion Dr	2073	1960	3096	2	
	2074 Campion Dr	2074	1960	3118	2	
	2075 Campion Dr	2075	1960	3302	2	
	2076 Campion Dr	2076	1960	3120	2	
	2078 Campion Dr	2078	1960	3302	2	
	2080 Campion Dr	2080	1960	3096	2	
	2082 Campion Dr	2082	1960	3302	2	
	2084 Campion Dr	2084	1960	2640	2	
	2091 Elrod Dr	2091	1960	3302	2	
	2093 Elrod Dr	2093	1960	3120	2	
	2094 Elrod Dr	2094	1960	3096	2	
	2095 Elrod Dr	2095	1960	3118	2	
	2096 Elrod Dr	2096	1960	3302	2	
	2097 Elrod Dr	2097	1960	3120	2	
	2098 Elrod Dr	2098	1960	1560	1	
	2099 Elrod Dr	2099	1960	3096	2	
	2100 Elrod Dr	2100	1960	3302	2	
	2101 Elrod Dr	2101	1960	2640	2	
	2102 Elrod Dr	2102	1960	3096	2	
	2103 Elrod Dr	2103	1960	3302	2	
	2104 Elrod Dr	2104	1960	3302	2	
	2105 Elrod Dr	2105	1960	3120	2	
	2106 Elrod Dr	2106	1960	2640	2	
	2107 Elrod Dr	2107	1960	3302	2	
	2110 Bancroft Dr	2110	1959	1794	1	
	2112 Bancroft Dr	2112	1959	1647	1	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	2113 Bancroft Dr	2113	1960	1794	1	
	2114 Bancroft Dr	2114	1959	1856	1	
	2115 Bancroft Dr	2115	1960	1756	1	
	2116 Bancroft Dr	2116	1959	1756	1	
	2117 Bancroft Dr	2117	1959	1856	1	
	2118 Bancroft Dr	2118	1959	1794	1	
	2119 Bancroft Dr	2119	1960	1794	1	
	2120 Bancroft Dr	2120	1959	1794	1	
	2121 Bancroft Dr	2121	1960	1794	1	
	2122 Bancroft Dr	2122	1959	1794	1	
	2124 Bancroft Dr	2124	1959	1794	1	
	2126 Bancroft Dr	2126	1959	1756	1	
	2128 Bancroft Dr	2128	1960	2086	1	
	2129 Bancroft Dr	2129	1960	1794	1	
	2130 Bancroft Dr	2130	1959	2268	1	
	2131 Bancroft Dr	2131	1960	1647	1	
	2132 Bancroft Dr	2132	1960	2086	1	
	2133 Bancroft Dr	2133	1960	1756	1	
	2134 Bancroft Dr	2134	1960	2086	1	
	2135 Bancroft Dr	2135	1960	1647	1	
	2136 Bancroft Dr	2136	1959	2268	1	
	2137 Bancroft Dr	2137	1959	1856	1	
	2140 Bancroft Dr	2140	1959	1756	1	
	2142 Bancroft Dr	2142	1959	1794	1	
	2144 Bancroft Dr	2144	1959	1794	1	
	2146 Bancroft Dr	2146	1959	1856	1	
	2147 Bancroft Dr	2147	1959	1794	1	
	2148 Bancroft Dr	2148	1960	1647	1	
	2149 Bancroft Dr	2149	1959	1856	1	
	2150 Bancroft Dr	2150	1960	1856	1	
	2151 Bancroft Dr	2151	1959	1794	1	
	2152 Bancroft Dr	2152	1960	1756	1	
	2153 Bancroft Dr	2153	1959	1794	1	
	2154 Bancroft Dr	2154	1960	1794	1	
	2155 Bancroft Dr	2155	1959	1794	1	
	2156 Bancroft Dr	2156	1960	1794	1	
	2157 Bancroft Dr	2157	1959	1856	1	
	2158 Bancroft Dr	2158	1960	1794	1	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	2159 Bancroft Dr	2159	1959	1647	1	
	2160 Bancroft Dr	2160	1960	1756	1	
	2161 Bancroft Dr	2161	1959	1756	1	
	2162 Bancroft Dr	2162	1960	1856	1	
	2163 Bancroft Dr	2163	1959	1794	1	
	2164 Bancroft Dr	2164	1960	1647	1	
	2165 Bancroft Dr	2165	1959	1794	1	
	2166 Bancroft Dr	2166	1960	1794	1	
	2167 Bancroft Dr	2167	1959	1794	1	
	2168 Bancroft Dr	2168	1960	1756	1	
	2169 Bancroft Dr	2169	1959	1794	1	
	2170 Bancroft Dr	2170	1960	1794	1	
	2171 Bancroft Dr	2171	1959	1794	1	
	2172 Bancroft Dr	2172	1960	1794	1	
	2173 Bancroft Dr	2173	1959	1856	1	
	2174 Bancroft Dr	2174	1960	1856	1	
	2175 Bancroft Dr	2175	1959	1756	1	
	2176 Bancroft Dr	2176	1960	1794	1	
	2177 Bancroft Dr	2177	1959	1794	1	
	2178 Bancroft Dr	2178	1960	1756	1	
	2179 Bancroft Dr	2179	1959	1856	1	
	2180 Bancroft Dr	2180	1960	1794	1	
	2181 Bancroft Dr	2181	1959	1794	1	
	2182 Bancroft Dr	2182	1960	1856	1	
	2183 Bancroft Dr	2183	1959	1794	1	
	2184 Bancroft Dr	2184	1960	1794	1	
	2186 Bancroft Dr	2186	1960	1794	1	
	2188 Bancroft Dr	2188	1960	1794	1	
	2200 Bauer Dr	2200	1959	1794	1	
	2201 Bauer Dr	2201	1959	1794	1	
	2202 Bauer Dr	2202	1959	1856	1	
	2203 Bauer Dr	2203	1959	1794	1	
	2204 Bauer Dr	2204	1959	1647	1	
	2205 Bauer Dr	2205	1959	1756	1	
	2206 Bauer Dr	2206	1959	1794	1	
	2207 Bauer Dr	2207	1959	1856	1	
	2208 Bauer Dr	2208	1959	1756	1	
	2209 Bauer Dr	2209	1959	1794	1	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	2210 Bauer Dr	2210	1960	1794	1	
	2211 Bauer Dr	2211	1959	1794	1	
	2212 Bauer Dr	2212	1959	1794	1	
	2213 Bauer Dr	2213	1959	1794	1	
	2214 Bauer Dr	2214	1959	1856	1	
	2215 Bauer Dr	2215	1959	1756	1	
	2216 Bauer Dr	2216	1959	1794	1	
	2217 Bauer Dr	2217	1959	1794	1	
	2218 Bauer Dr	2218	1959	1794	1	
	2219 Bauer Dr	2219	1959	1856	1	
	2220 Bauer Dr	2220	1959	1794	1	
	2221 Bauer Dr	2221	1959	1756	1	
	2222 Bauer Dr	2222	1959	1856	1	
	2223 Bauer Dr	2223	1959	1794	1	
	2224 Bauer Dr	2224	1959	1647	1	
	2225 Bauer Dr	2225	1959	1856	1	
	2226 Bauer Dr	2226	1959	1756	1	
	2227 Bauer Dr	2227	1959	1794	1	
	2228 Bauer Dr	2228	1959	1794	1	
	2229 Bauer Dr	2229	1959	1647	1	
	2230 Bauer Dr	2230	1959	1794	1	
	2232 Bauer Dr	2232	1959	1856	1	
	2240 Blain Dr	2240	1960	1794	1	
	2241 Blain Dr	2241	1959	1856	1	
	2242 Blain Dr	2242	1960	1794	1	
	2243 Blain Dr	2243	1959	1794	1	
	2244 Blain Dr	2244	1960	1794	1	
	2245 Blain Dr	2245	1960	1794	1	
	2246 Blain Dr	2246	1959	1794	1	
	2247 Blain Dr	2247	1960	1794	1	
	2248 Blain Dr	2248	1959	1856	1	
	2249 Blain Dr	2249	1959	1647	1	
	2250 Blain Dr	2250	1959	1647	1	
	2251 Blain Dr	2251	1960	1856	1	
	2252 Blain Dr	2252	1960	1794	1	
	2253 Blain Dr	2253	1960	1794	1	
	2254 Blain Dr	2254	1960	1794	1	
	2255 Blain Dr	2255	1959	1856	1	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
MOLOLANI (continued)	2256 Blain Dr	2256	1960	1794	1	634
	2257 Blain Dr	2257	1960	1756	1	
	2258 Blain Dr	2258	1960	1856	1	
	2259 Blain Dr	2259	1960	1794	1	
	2260 Blain Dr	2260	1960	1794	1	
	2261 Blain Dr	2261	1959	1794	1	
	2262 Blain Dr	2262	1960	1794	1	
	2264 Blain Dr	2264	1960	1856	1	
PA HONUA 3	1704 Igarta Ct	7114	2007	3698	2	
	1708 Dodson St	7095	2007	3717	2	
	1708 Igarta Ct	7115	2007	3882	2	
	1712 Igarta Ct	7116	2007	3736	2	
	1714 Dodson St	7096	2007	3736	2	
	1716 Igarta Ct	7117	2007	3717	2	
	1721 Titcomb Pl	7177	2007	3717	2	
	1722 Titcomb Pl	7178	2007	3736	2	
	1724 Dodson St	7097	2007	3717	2	
	1725 Titcomb Pl	7179	2007	3820	2	
	1726 Titcomb Pl	7180	2007	3698	2	
	1730 Dodson St	7098	2007	3698	2	
	1734 Dodson St	7099	2007	3736	2	
	1749 Cannery Pl	7078	2007	3882	2	
	1754 Arquero Pl	7075	2007	3820	2	
	1755 Arquero Pl	7076	2007	3736	2	
	1758 Arquero Pl	7077	2007	3717	2	
	1759 Canney Pl	7079	2007	3717	2	
	1760 Canney Pl	7080	2007	3736	2	
	1763 Canney Pl	7081	2007	3882	2	
	1764 Canney Pl	7082	2007	3698	2	
	1773 Kiaha Ct	7136	2007	3698	2	
	1773 Littler Ct	7141	2007	3882	2	
	1773 Meno Ct	7146	2007	3717	2	
	1773 Peleiholani Ct	7161	2007	3882	2	
	1773 Richardson Ct	7172	2007	3882	2	
	1774 Kiaha Ct	7137	2007	3736	2	
	1774 Littler Ct	7142	2007	3698	2	
	1774 Meno Ct	7147	2007	3736	2	
	1774 Peleiholani Ct	7162	2007	3698	2	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
PA HONUA 3 (continued)	1774 Richardson Ct	7173	2007	3717	2	
	1777 Kiaha Ct	7138	2007	3717	2	
	1777 Littler Ct	7143	2007	3736	2	
	1777 Meno Ct	7148	2007	3698	2	
	1777 Peleiholani Ct	7163	2007	3736	2	
	1777 Richardson Ct	7174	2007	3717	2	
	1778 Kiaha Ct	7139	2007	3882	2	
	1778 Littler Ct	7144	2007	3882	2	
	1778 Meno Ct	7149	2007	3717	2	
	1778 Peleiholani Ct	7164	2007	3717	2	
	1778 Richardson Ct	7175	2007	3698	2	
	1782 Kiaha Ct	7140	2007	3698	2	
	1782 Littler Ct	7145	2007	3717	2	
	1782 Meno Ct	7150	2007	3882	2	
	1782 Peleiholani Ct	7165	2007	3698	2	
	1782 Richardson Ct	7176	2007	3736	2	
	2676 Irwin St	7118	2007	3717	2	
	2677 Kapalu Pl	7130	2007	3698	2	
	2678 Kapalu Pl	7131	2007	3698	2	
	2681 Kapalu Pl	7132	2007	3717	2	
	2682 Irwin St	7119	2007	3698	2	
	2682 Kapalu Pl	7133	2007	3736	2	
	2685 Kapalu Pl	7134	2007	3698	2	
	2686 Kapalu Pl	7135	2007	3882	2	
	2688 Irwin St	7120	2007	3736	2	
	2698 Irwin St	7121	2007	3820	2	
	2704 Irwin St	7122	2007	3717	2	
	2709 English St	7100	2007	3820	2	
	2710 Irwin St	7123	2007	3736	2	
	2711 Chow Cir	7083	2007	3717	2	
	2717 Chow Cir	7084	2007	3736	2	
	2718 Chow Cir	7085	2007	3820	2	
	2723 Chow Cir	7086	2007	3698	2	
	2727 Chow Cir	7087	2007	3717	2	
	2727 English St	7101	2007	3736	2	
	2731 Chow Cir	7088	2007	3736	2	
	2732 English St	7102	2007	3882	2	
	2735 Chow Cir	7089	2007	3698	2	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
PA HONUA 3 (continued)	2738 English St	7103	2007	3698	2	212
	2739 Chow Cir	7090	2007	3717	2	
	2741 English St	7104	2007	3717	2	
	2742 English St	7105	2007	3736	2	
	2743 Chow Cir	7091	2007	3736	2	
	2744 Irwin St	7124	2007	3736	2	
	2748 English St	7106	2007	3820	2	
	2749 Chow Cir	7092	2007	3717	2	
	2749 English St	7107	2007	3882	2	
	2750 Irwin St	7125	2007	3820	2	
	2751 Irwin St	7126	2007	3717	2	
	2753 Chow Cir	7093	2007	3698	2	
	2754 English St	7108	2007	3820	2	
	2757 English St	7109	2007	3698	2	
	2758 Irwin St	7127	2007	3820	2	
	2759 Chow Cir	7094	2007	3736	2	
	2760 English St	7110	2007	3717	2	
	2766 Irwin St	7128	2007	3698	2	
	2772 Irwin St	7129	2007	3717	2	
	2775 English St	7111	2007	3882	2	
	2776 English St	7112	2007	3736	2	
	2782 English St	7113	2007	3698	2	
	2792 Phillips Pl	7166	2007	3736	2	
	2795 Phillips Pl	7167	2007	3882	2	
	2796 Phillips Pl	7168	2007	3717	2	
	2799 Phillips Pl	7169	2007	3698	2	
	2800 Phillips Pl	7170	2007	3698	2	
	2804 Phillips Pl	7171	2007	3820	2	
	4007 Moses St	7151	2007	3736	2	
	4013 Moses St	7152	2007	3717	2	
	4018 Moses St	7153	2007	3717	2	
	4019 Moses St	7154	2007	3882	2	
	4024 Moses St	7155	2007	3698	2	
	4025 Moses St	7156	2007	3820	2	
	4035 Moses St	7157	2007	3717	2	
	4041 Moses St	7158	2007	3736	2	
	4052 Moses St	7159	2007	3736	2	
	4058 Moses St	7160	2007	3717	2	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
ULUPAU (Central & South Portion)	2601 Maxam Pl	2601	1976	12054	8	
	2602 Maxam Pl	2602	1976	12054	8	
	2603 Maxam Pl	2603	1976	4877	4	
	2604 Maxam Pl	2604	1976	12054	8	
	2605 Maxam Pl	2605	1976	4877	4	
	2606 Maxam Pl	2606	1976	4877	4	
	2607 Maxam Pl	2607	1976	4877	4	
	2608 Johnson St	2608	1976	4877	4	
	2609 Johnson St	2609	1976	12054	8	
	2610 Johnson St	2610	1976	12054	8	
	2611 Maxam Pl	2611	1976	4877	4	
	2612 Maxam Pl	2612	1976	4877	4	
	2613 Bordelon Lp	2613	1976	12054	8	
	2614 Bordelon Lp	2614	1976	4877	4	
	2615 Bordelon Lp	2615	1976	4877	4	
	2616 Bordelon Lp	2616	1976	4877	4	
	2617 Bordelon Lp	2617	1976	7811	4	
	2618 Bordelon Lp	2618	1976	7811	4	
	2619 Bordelon Lp	2619	1976	7811	4	
	2620 Bordelon Lp	2620	1976	7811	4	
	2621 Bordelon Lp	2621	1976	4877	4	
	2622 Bordelon Lp	2622	1976	4877	4	
	2623 Bordelon Lp	2623	1976	7811	4	
	2624 Bordelon Lp	2624	1976	7811	4	
	2625 Bordelon Lp	2625	1976	7811	4	
	2626 Bordelon Lp	2626	1976	4877	4	
	2627 Bordelon Lp	2627	1976	9308	4	
	2628 Bordelon Lp	2628	1976	9308	4	
	2629 Bordelon Lp	2629	1976	7811	4	
	2630 Bordelon Lp	2630	1976	7811	4	
	2631 Bordelon Lp	2631	1976	7811	4	
	2632 Bordelon Lp	2632	1976	4877	4	
	2633 Bordelon Lp	2633	1976	4877	4	
	2634 Connor Lp	2634	1976	4877	4	
	2635 Connor Lp	2635	1976	14679	8	
	2636 Connor Lp	2636	1976	7811	4	
	2637 Connor Lp	2637	1976	7811	4	
	2638 Connor Lp	2638	1976	9308	4	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
ULUPAU (Central & South Portion) (continued)	2639 Connor Lp	2639	1976	7811	4	296
	2640 Connor Lp	2640	1976	7811	4	
	2641 Connor Lp	2641	1976	9308	4	
	2642 Connor Lp	2642	1976	9308	4	
	2643 Connor Lp	2643	1976	7811	4	
	2644 Connor Lp	2644	1976	9308	4	
	2645 Connor Lp	2645	1976	7811	4	
	2646 Connor Lp	2646	1976	9308	4	
	2647 Connor Lp	2647	1976	4877	4	
	2648 Connor Lp	2648	1976	14679	8	
	2649 Connor Lp	2649	1976	4877	4	
	2650 Connor Lp	2650	1976	4877	4	
	2651 Connor Lp	2651	1976	4877	4	
	2652 Connor Lp	2652	1976	7811	4	
	2653 Connor Lp	2653	1976	9308	4	
	2654 Connor Lp	2654	1976	9308	4	
	2655 Connor Lp	2655	1976	7811	4	
	2656 Connor Lp	2656	1976	9308	4	
	2657 Connor Lp	2657	1976	7811	4	
	2658 Connor Lp	2658	1976	9308	4	
	2659 Connor Lp	2659	1976	7811	4	
	2660 Connor Lp	2660	1976	9308	4	
	2661 Connor Lp	2661	1976	9308	4	
	2662 Connor Lp	2662	1976	4877	4	
	2663 Connor Lp	2663	1976	4877	4	
	2664 Dias Pl	2664	1976	14679	8	
	2665 Dias Pl	2665	1976	9308	4	
	Detached Carport	2853	1976	920	1	
	Detached Carport	2854	1976	920	1	
	Detached Carport	2855	1976	520	1	
	Detached Carport	2856	1976	520	1	
	Detached Carport	2857	1976	920	1	
	Detached Carport	2858	1976	520	1	
	Detached Carport	2859	1976	520	1	
	Detached Carport	2860	1976	1720	1	
	Detached Carport	2861	1976	520	1	
	Detached Carport	2862	1976	520	1	
	Detached Carport	2863	1976	920	1	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
ULUPAU (Central & South Portion) (continued)	Detached Carport	2864	1976	520	1	
	Detached Carport	2865	1976	520	1	
	Detached Carport	2866	1976	920	1	
	Detached Carport	2867	1976	920	1	
	Detached Carport	2868	1976	520	1	
	Detached Carport	2869	1976	520	1	
	Detached Carport	2870	1976	520	1	
	Detached Carport	2871	1976	520	1	
	Detached Carport	2872	1976	520	1	
	Detached Carport	2873	1976	520	1	
	Detached Carport	2874	1976	520	1	
	Detached Carport	2875	1976	520	1	
	Detached Carport	2876	1976	920	1	
	Detached Carport	2877	1976	920	1	
	Detached Carport	2878	1976	920	1	
	Detached Carport	2879	1976	200	1	
	Detached Carport	2880	1976	200	1	
	Detached Carport	2881	1976	200	1	
	Detached Carport	2882	1976	200	1	
	Detached Carport	2883	1976	920	1	
	Detached Carport	2884	1976	920	1	
	Detached Carport	2885	1976	520	1	
	Detached Carport	2886	1976	520	1	
	Detached Carport	2887	1976	520	1	
	Detached Carport	2888	1976	520	1	
	Detached Carport	2889	1976	920	1	
	Detached Carport	2890	1976	920	1	
	Detached Carport	2891	1976	520	1	
	Detached Carport	2892	1976	520	1	
	Detached Carport	2893	1976	920	1	
	Detached Carport	2894	1976	520	1	
	Detached Carport	2895	1976	520	1	
	Detached Carport	2896	1976	920	1	
	Detached Carport	2897	1976	920	1	
	Detached Carport	2898	1976	520	1	
	Detached Carport	2899	1976	520	1	
	Detached Carport	2900	1976	920	1	
	Detached Carport	2901	1976	920	1	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
ULUPAU (Central & South Portion) (continued)	Detached Carport	2902	1976	520	1	
	Detached Carport	2903	1976	520	1	
	Detached Carport	2904	1976	920	1	
	Detached Carport	2905	1976	920	1	
	Detached Carport	2906	1976	920	1	
	Detached Carport	2907	1976	520	1	
	Detached Carport	2908	1976	520	1	
	Detached Carport	2909	1976	920	1	
	Detached Carport	2910	1976	520	1	
	Detached Carport	2911	1976	520	1	
	Detached Carport	2912	1976	920	1	
	Detached Carport	2913	1976	920	1	
	Detached Carport	2914	1976	920	1	
	Detached Carport	2915	1976	920	1	
	Detached Carport	2916	1976	1720	1	
	Detached Carport	2917	1976	520	1	
	Detached Carport	2918	1976	520	1	
	Detached Carport	2919	1976	920	1	
	Detached Carport	2920	1976	520	1	
	Detached Carport	2921	1976	520	1	
	Detached Carport	2922	1976	920	1	
	Detached Carport	2923	1976	520	1	
	Detached Carport	2924	1976	520	1	
	Detached Carport	2925	1976	920	1	
	Detached Carport	2926	1976	520	1	
	Detached Carport	2927	1976	520	1	
	Detached Carport	2928	1976	920	1	
	Detached Carport	2929	1976	920	1	
	Detached Carport	2930	1976	920	1	
	Detached Carport	2931	1976	520	1	
	Detached Carport	2932	1976	520	1	
	Detached Carport	2933	1976	520	1	
	Detached Carport	2934	1976	520	1	
	Detached Carport	2935	1976	920	1	
	Detached Carport	2936	1976	920	1	
	Detached Carport	2937	1976	520	1	
	Detached Carport	2938	1976	520	1	
	Detached Carport	2939	1976	520	1	

PROPERTY LIST

Neighborhood	Address	Facility Number	Year Built	Area (sf)	# Units	Total
ULUPAU (Central & South Portion) (continued)	Detached Carport	2940	1976	520	1	103
	Detached Carport	2941	1976	920	1	
	Detached Carport	2942	1976	920	1	
	Detached Carport	2943	1976	920	1	
	Detached Carport	2944	1976	520	1	
	Detached Carport	2945	1976	520	1	
	Detached Carport	2946	1976	920	1	
	Detached Carport	2947	1976	920	1	
	Detached Carport	2948	1976	520	1	
	Detached Carport	2949	1976	520	1	
	Detached Carport	2950	1976	920	1	
	Detached Carport	2951	1976	520	1	
	Detached Carport	2952	1976	520	1	
	Detached Carport	2953	1976	520	1	
	Detached Carport	2954	1976	520	1	
	Detached Carport	2955	1976	920	1	

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